THE

DUBLIN QUARTERLY JOURNAL

OF

MEDICAL SCIENCE.

NOVEMBER 1, 1866.

PART I.

ORIGINAL COMMUNICATIONS.

ART. VII.—*On Amputation at the Hip-joint.* By RICHARD G. BUTCHER, Esq., President of the Royal College of Surgeons in Ireland; Honorary M.D. of the University of Dublin; Associate-Fellow of the College of Physicians of Philadelphia; Surgeon to Mercer's Hospital, Dublin; and Lecturer on Clinical Surgery.

ENORMOUS OSTEO-SARCOMATOUS TUMOUR INVOLVING THE LEG AND THIGH EXTENSIVELY; AMPUTATION AT THE HIP-JOINT.

AMPUTATION at the hip-joint is deservedly ranked amongst the most formidable operations in the whole range of surgery. The risk from hemorrhage, primary and secondary, the peril from shock, the danger from phlebitis, from blood-poisoning from so extensive a suppurating wound, make the surgeon pause ere he adopts it as a last and necessitous resource for the salvation of life. When once the propriety of the measure is admitted and settled upon, no time should be lost; hesitation and delay should never take place, lest the favourable time should pass away, the operation be performed too late, and the patient's doom more quickly sealed; besides, by such imprudence, practitioners may be intimidated, science retarded and severely injured.

On the 20th of August, 1819, the late Mr. Richard Carmichael removed the lower extremity at the hip-joint, for a large osteo-sarcomatous tumour, in the Richmond Hospital. On the fifth day the patient expired.

This is the first instance in which the operation was performed in Ireland—forty-seven years ago—and from that date until the present it has never been repeated. I am therefore anxious to draw attention to the operation, and lay before my professional brethren the history of a case upon which I recently operated, with such observations as I think best suited to the subject.

The necessity for amputation has always existed, and ever will continue, so long as the destructive effects of injuries and diseases of the limbs cannot be obviated in any other manner. Happily for science and humanity conservative surgery has done much in the present century to lessen mutilation and, at the same time, to preserve for the sufferer a limb far better for the performance of its functions, be it the upper or lower extremity, than any mechanical contrivance, no matter how admirably devised and executed, could possibly accomplish; and the surgeon who would now amputate the lower extremity for disease of the knee-joint, when excision was applicable, or who would lop off the upper extremity for disease of the elbow-joint, when excision was suitable, in my mind should be considered just as censurable as the surgeon who would peril a patient's life by tying the femoral artery in an ordinary case of popliteal aneurism, without first having submitted the patient to a trial of the treatment by compression, so carefully taught and inculcated in the truthful statements published by the late Dr. Bellingham.

There are certain cases, however, where amputation affords the only chance of saving or prolonging life; amongst these may be classed, where incurable disease seizes upon an extremity, and involves its destruction to a greater or less extent, far up, near to its articulation with the trunk; then, be it upper or lower extremity, as a *dernier ressort* it must be taken away. Mr. Hennen, in his valuable work on military surgery (p. 251, Ed. 2.), makes this excellent observation, founded on the purest humanity, and justified by the soundest professional principle, that *to save one limb is infinitely more honourable to the surgeon than to* have performed numerous amputations, however successful; but it is a remark, notwithstanding its quaintness, fully as true, that "it is much better for a man to live with three limbs, than to die with four."

Mr. Samuel Cooper justly states that the very idea of this formidable operation—amputation at the hip-joint—for a long while checked the hand even of the most ready advocate for the amputating knife, and every mind shuddered at so extensive a mutilation—yet it could not be denied that the chance of saving life occasionally depended upon a submission to the greatest temporary suffering, and that without the most cruel of sacrifices the preservation of the patient was totally impossible. Dreadful as amputation at the hip appeared, both in respect to the magnitude of the part of the body to be removed and the extent of the wound caused by such removal, the desperate nature of some cases at length began to incline surgeons to view more dispassionately a scheme at which the mind at first naturally revolted. But yet, to show how the love of life—impressed, I believe, on man as his great safeguard—will protect him and regulate his actions to insure that security, I will just describe what Morand, the great French surgeon, the earliest practitioner who made this severe operation the subject of attention, has stated in his work on surgery (*Opusc. de Chir. p.* 183). He reminds the reader that in the Hotel des Invalides, at Paris, mutilated objects are in recollection who had lost all their thighs and arms, so that, unless assisted, they could not stir, and it was necessary to feed and wait upon them like new-born infants. Let it not be wondered at, then, how some are influenced by a relish for life. This same great surgeon, it would appear, was the first who ventured to express an opinion on the possibility of the success of the operation. This question was taken up with much assiduity by the Academy of Surgery, and a favourable report was returned by Ledran and Guerin. It became then a prize question in the French Academy, at the instance of Morand, in 1756, and again in 1759; none of the essays on the first occasion were found worthy of the prize, which on the second was awarded to Barbet, who forcibly advocated the propriety of the operation, and pointed out the cases to which he considered it rationally applicable. If, for instance, a cannon ball, or any other violent contusing cause, had carried off or crushed the thigh, so as to leave only a few parts to be cut to make the separation complete, he thought a surgeon ought not to hesitate about doing it. Other instances are cited, but I do not think they bear upon the question—the propriety of the operation, with its attendant dangers; the cases portrayed cannot be considered as amputation at the hip-joint. The proceeding, as detailed by this author, seems to me to have no analogy at all to

the bloody operation of taking the thigh bone out of the socket; it is quite a different thing when the operator has to cut through parts which bleed profusely, and are endowed with life and sensibility. Though the operation was first considered in France, and numerous essays were written for the several prizes offered year after year, it is a remarkable fact in the history of surgery, that the operation should have been first put in practice in England—the operator being Mr. Henry Thompson, surgeon to the London Hospital. Larrey tells us he performed the operation twice in Egypt, and once while he was serving with the French army on the Rhine. He was encouraged to make these attempts to save his patients by the consideration that he had already preserved some lives by amputating either both thighs, both legs, or both arms, or removing the humerus at the shoulder-joint. Larrey has also the merit of having first done the operation in this description of cases in which (with the exception of bad cases of necrosis, or of incurable disease of the higher part of the femur) it is more decidedly proper than any other, viz., gunshot injuries of the head, neck, and upper parts of the femur, with or without injury of the femoral artery, or, when the limb has been carried away by a shell or cannon ball too high up to admit of amputation in the ordinary manner. However, he also regards as fit occasions for amputation at the hip-joint, circumstances in which from gunshot violence the limb is seized or threatened with gangrene nearly up to the hip.—*Mem. de Chir. Mil.*, T. ii., p. 185.

Severe as the operation is, Larrey contends that if it ever proves the means of saving lives which are in danger it is an act of humanity. After this period many successful cases followed—by Millingen, Brownrigg, Guthrie, Delpech, Orthon, Mott of New York, Wedomyr, Syme, Brice, Sir A. Cooper, and others; and taking the converse, the operation, even in the course in which it is indicated, has failed in the hands of some of the most eminent surgeons, amongst others Sir A. Cooper, Sir B. Brodie, Dupuytren, Mr. Guthrie, Baron Larrey, Blick, Cole, Delpech, Dieffenbach, Emery, Gensoul, Clot-Bey, Roux, Carmichael, and Pelikan of Wilna.—*Cyclopædia of Practical Surgery*, p. 182.

The successes of the operation in later years, I am persuaded, must in a great measure be attributed to the effects of chloroform, in averting the shock, and likewise to a careful selection of the cases operated on; no one now would think of removing the limb from the socket in scrofulous disease of the joint, yet it might be perfectly justifiable to excise the diseased head of the bone.

Mr. Erichsen (*Science and Art of Surg.*, 4th Ed., 1861, p. 59.), availing himself of the labours of Dr. P. Smith, and also of those of other writers, has given the result of one hundred and twenty-six cases of this operation, of which seventy-six proved fatal; of forty-seven cases in which it was performed for injuries, thirty-five died. According to Mr. M'Leod, of the ten cases that occurred in the Crimea, not one recovered. Mons. Legoust, who served with the French army in the Crimea, collected thirty cases of this amputation, primarily performed for gunshot wounds, which all terminated in death:—"Some died during the operation itself, others soon after they had been carried to their beds, and all within ten days, except two cases mentioned by Larrey, one of whom lived twenty-one, and the other thirty days."

I find in the very beautiful book issued from the War Department, Surgeon-General's Office, Washington, 1865, (at page 48,) the following satisfactory report:—"At the commencement of the war the uniform fatality of amputation at the hip-joint in the Crimean war was impressed upon the minds of surgeons, and many believed that the operation should be discarded altogether; still it has been occasionally performed, and several lives have been unquestionably saved by it." Then follows the details of a very interesting case of primary amputation, performed, April 29th, 1863, by Surgeon Shippen. A letter, dated January 12th, 1865, was read from the patient, and represented him as in excellent health and spirits; a beautiful photograph, taken from the man a year after the operation, accompanies this description. Another successful primary case, by Dr. Fenner, is likewise mentioned in this valuable book; operation performed twenty-four hours after receipt of the injury. A table shows a return of twenty-one cases—nine were primary, and twelve were secondary operations.

The conclusions arrived at by the writer as to the advisability of early amputation at the hip-joint, after gunshot injury, is thus put. There seem to be but three conditions under which early amputation at the hip-joint is admissible in military surgery, viz.: when nearly the entire thigh is carried away by a large projectile; when the totality of the femur is destroyed by osteo-myelitis; and, possibly, when, with comminution of the upper extremity of the femur, the femoral vessels are wounded.

The experience of M. Jules Roux, in the Italian war, seems to prove conclusively, that secondary amputations at the hip-joint are less dangerous than primary ones; he has practised it four times,

and in all cases with success. Dr. Gross, in his magnificent work on surgery (Gross's *System of Surgery*, Vol. II., p. 1044, 3rd Ed.), cites a most interesting case, operated on successfully by Professor Pancoast, on account of a large encephaloid tumour of the upper part of the thigh; patient thirty-eight years old. The operation was performed in the Pennsylvania Hospital, in June, 1860; pressure was made upon the abdominal aorta, by means of a tourniquet encircling the body at the umbilicus.

Professor Gross likewise gives the details of a case upon which he successfully operated; the patient, although exceedingly anemic and exhausted at the time, recovered without any untoward symptoms. Engravings from photographs of both these cases, after cure, are given, and are in every way highly creditable to surgery.

In the *Lancet*, Vol. II., 1864, p. 551, Dr. Frazer, of Calcutta, gives the details of a successful case of this chief of amputations which was, however, secondary to an amputation of the thigh twelve days previously; this was stated to be the second successful instance in India, the first having occurred to Mr. Wigstrom of the 24th Dragoons; the details of this case will be found in the *Lancet* for 1850. In the *Lancet* for June, 1865, a case is recorded where Mr. Lane, of St. Mary's Hospital, operated on a woman, aged twenty-one, for malignant disease of the thigh, of rapid and painful growth; she recovered from the operation, but death followed in eight weeks afterwards, from pus in the femoral artery. In this same number of the *Lancet* we have the following table (page 303) showing the results of the operations in the metropolitan hospitals. All severe injuries requiring it, terminated fatally.

The operation has been performed unsuccessfully by Mr. Wheatcroft of Cannock, on a woman, aged forty (*Lancet*, May 21st, 1853); fatally also by Mr. W. Swain, of Devonport, on a man aged thirty-six years, for encephaloid tumour of the left thigh (*Lancet*, May 27th, 1865); and at the Jersey Hospital, successfully, by Mr. Godfray, on a boy aged fifteen, for extensive necrosis of the femur. I have pleasure in drawing attention also to Mr. J. J. Gamgee's successful case operated on in the Birmingham Hospital, and published in a separate memoir, illustrated with four very beautiful photographic pictures, and reviewed in the *Lancet*, November, 1865; and it should not be forgotten that Mr. Sands Cox's interesting case and essay on the same subject, emanated from the same town thirty years before.

Table showing the Results of Amputation at the Hip-joint, in the London Hospitals.

No.	Reference to the *Lancet*	Date of operation	Operator	Hospital	Sex	Age	Nature of Disease	Result
1	Vol. I., 1857, p. 31	1852	Mr. Hancock	Charing-cross	M.	32	Severe compound fracture of leg, thigh, and arm; erysipelas and gangrene on seventeenth day	Death immediately afterwards from shock.
2	Vol. I., 1853, p. 405	1853	Mr. C. Guthrie	Westminster	M.	50	Malignant disease of femur . .	Death on second day, from exhaustion and hemorrhage.
3	Vol. I., 1854, p. 442	1854	Mr. Adams .	London .	F.	26	Fibro-cystic disease of leg and thigh	Death on twelfth day, from diarrhea.
4	Vol. I., 1855, p. 363	1855	Mr. Erichsen	Univ. College	M.	26	Severe compound fracture of thigh, high up	Death two hours after.
5	Vol. I., 1857, p. 444	1855	Mr. Tatum .	St. George's .	M.	17	Medullary cancer of femur . .	Recovery.
6	Vol. I., 1856, p. 6	1856	Mr. Curling .	London .	F.	40	Medullary cancer of thigh . .	Recovery; death in ten months, from internal disease.
7	Vol. I., 1857, p. 31	1856	Mr. Hancock	Charing-cross	M.	24	Extensive disease of thigh and entire femur	Recovery.
8	Vol. I., 1857, p. 343 and 380	1857	Mr. Stanley .	St. Barthol. .	M.	52	Medullary cancer of femur . .	Death two hours after, from hemorrhage.
9	Vol. II., 1857, p. 443	1857	Mr. Lane .	St. Mary's .	M.	29	Extensive injury to thigh, groin, and perineum	Death in five hours, from shock
10	Vol. I., 1860, p. 319	1860	Mr. Hancock	Charing-cross	M.	35	Disease of stump in thigh, after two previous amputations	Death in twelve hours.
11	Vol. I., 1865, p. 651	1862	Mr. Lane .	St. Mary's .	F.	21	Malignant disease of thigh . .	Recovery; death in eight weeks, from pus in the femoral artery.
12	Vol. I., 1865, p. 652	1862	Mr. P. Young	St. Mary's .	M.	21	Extensive fracture of both limbs .	Death, a few hours after, from shock.
13	Vol. I., 1865, p. 652	1862	Mr. Wells .	Samaritan .	F.	26	Malignant tumour of the thigh .	Recovery; death a year after, from cancer.
14	Vol. I., 1865, p. 566	1863	Mr. Lane .	St. Mary's .	M.	17	Malignant disease of femur . .	Recovery; death in two months, from chest disease.
15	Vol. I., 1865, p. 566	1863	Mr. Curling .	London .	M.	7	Necrosis of shaft, head, and neck of femur	Death in five weeks.
	I shall add to this Table the following three cases, which occurred in the London Hospitals, and were reported in the Lancet.							
16	Vol. I., 1866, p. 222	1865	Mr. Erichsen	Univ. College	M.	27	Encepahloid tumour of the femur .	Immediate effects of operation recovered from; wound still discharging when report closed.
17	Vol. I., 1866, p. 367	1865	Mr. Holmes .	St. George's .	F.	36	Recurrent fibroid disease of thigh .	Recovery.
18	Vol. I., 1866, p. 386	1865	Mr. Lee .	St. George's .	M.	14	Disease of hip-joint and pelvis .	Recovery.

Table showing the Results of the Cases of Amputation at the Hip-joint, which have occurred at Philadelphia.

No.	Operator	Time of Operation	Sex	Age	Disease	Interval between First Appearance of Disease or Injury and Operation	Operation	Result	Cause of Death	Remarks
1	Duffy	1840	Female	6	Morbus coxarius	—	—	Recovered	—	Seventeen years afterwards the patient was successfully delivered in the Lying-in Department of the Alms House. Stump well.
2	Pancoast	1860	Male	32	Medullary sarcoma	One year	Integumentary flaps and circulars of muscles, accupression and ligatures	Recovered	—	Died two years afterwards from a return of the disease in the lymphatics adjacent to the stump.
3	Gross,	1862	Female	12	Loss of integument, and suppuration following a burn	Fifteen months	—	Recovered	—	Remained well, 1864.
4	Hewson	1864	Male	6	Railroad injury	Within twenty-four hours	—	Died	Renewed shock	Lived twelve hours.
5	Pancoast	1865	Female	30	Huge osteo-chondromatous tumour	Seven years and eight months	Integumentary flaps and circular of muscle	Recovered	—	Remains well.
6	Gross	1865	Male	54	Encephaloid	Four years	Integumentary flaps and circular of muscles	Recovered	—	Remains well.
7	Hewson	1865	Female	28	Enchondroma	Several years	Flap operation, accupressure	Died	Shock	Lived fifteen hours.
8	Packard	1865	Male	21	Re-amputation of stump of diseased bone	Five months	Flap operation	Recovered	—	Remains well.
9	Morton	1866	Male	21	Re-amputation for osteo-myelitis	Sixteen months	Integumentary flaps and circular of muscles	Recovered	—	Remains well.
10	Agnew	1866	Male	48	Disease of femur and soft parts following a gunshot wound	Three years	Integumentary flaps and circular of muscles	Died	Hemorrhage from the femoral 12 days after operation	
11	Forbes	1866	Male	—	Diseased femur following gunshot wound	—	Integumentary flaps and circular of muscles	Died	Lived sixty hours	

In the *American Journal* for the month of July, 1866, will be found an interesting paper by Dr. Thomas Morton, one of the surgeons to the Pennsylvania Hospital, with an account of a case in which he amputated successfully at the hip-joint; and in this memoir he likewise details the histories of all the cases, eleven in number, which have occurred in Philadelphia.

The table (on page 304), which is appended to his observations, is very interesting, conveying much information, and showing at a glance the results of these several amputations at the hip-joint.

I am not aware that any recently published case has escaped my notice, so now shall detail the history, operation, procedure, and management of one recently under my charge in Mercer's Hospital.

Enormous Osteo-Sarcomatous Tumour Involving the Leg and Thigh Extensively; Amputation at the Hip-Joint.

Mary Keogh, aged fifty-one years, admitted to Mercer's Hospital, in November, 1856. Her occupation was that of a servant, being employed chiefly in scouring out rooms. More than four years and a half before her admission on the above date, she struck her right knee forcibly upon a stone step, having slipped when carrying up a pail of water; the pain was very severe in the stricken part, on the inner surface of the head of the tibia—so acute that she became weak, and fainted; she was compelled to stay quiet for some days, but within a fortnight resumed her ordinary occupation. When in the kneeling position she constantly felt uneasiness; and, though but resting little weight upon the part, yet she was very sensible of its inability to bear the burden equally as the other; and so struggled on, occasionally working, always pained, often laid up altogether, and totally incapacitated from either kneeling or walking; slowly and gradually an enlargement of the upper part of the tibia, on its inner surface, attracted attention; an oblong defined swelling, not discoloured or painful, except when pressed forcibly upon; in its most elevated part it did not exceed three-quarters of an inch, and gradually fined off to its circumferential limits. Shortly after this, pain left the part altogether, confidence in the movements of the limb was regained, and the patient followed her former avocations uninterruptedly for many a month—I may even say years; she was industrious, and constantly employed, and though occasionally pained a little in the part, yet never to such an extent as to interrupt her engagements, or confine her to bed.

Four months before the date of the patient's reception into the hospital, she slipped in coming down stairs, and was precipitated to the next landing, where she fell heavily, the right limb being violently twisted under her; after this accident she was unable to move the leg, or rest in the least degree her weight upon it, and had to be carried to bed, where she was treated for a period of six weeks; at the end of this time she was sufficiently recovered to get up and resume her business and duties. It was remarkable at this time that the swelling on the inner side of the tibia was not increased or rendered more sensitive, in consequence of the recently-sustained injury; for though the enlargement upon the tibia participated at first in the general uneasiness around, yet the joint suffered far more by the straining, stretching, and twisting of its ligaments; pain and tenderness forsook the swelling long before it was removed from the ligamentous structure binding the bones; the tumour seemed to suffer more from contusion—the joint from being forcibly wrenched; again the patient went about so far improved, as to walk and to be able to flex the leg upon the thigh, its dimensions being in no part increased, and the enlarged part of the tibia not in the least rendered more prominent or sensitive upon pressure; again, the woman met with an accident three weeks before her coming under my care: she slipped off the curb-stone of the pathway, and fell with violence on the affected limb; the leg was checked in the fall, and turned outwards, the swollen part of the tibia coming in contact with the sharp edge of the curb-stone, she suffered very severe contusion, accompanied with acute pain and attended with faintness and vomiting; she had to be lifted from the ground and conveyed home. When she was laid in bed, the limb was stuped, leeched, and placed in the most favourable position, constitutional means were likewise had recourse to, and, by the efficient combination of local and constitutional measures, the early inflammatory symptoms developed in a marked way, even in a few hours, were subdued, but not removed altogether, and at this stage of the affection the patient was admitted to hospital. Her condition at this period was as follows:—She was emaciated and greatly depressed, suffering much pain at intervals, and chiefly the severest paroxysms at night; restless and agitated by day; appetite gone, and even a loathing to nourishment of every kind; pulse feeble, yet steady in its beat, but rapid, averaging about 94. The limb at this time was but little enlarged above the knee, and the knee but little participated in the swelling or expansion of the inner side of the upper part of the tibia; the

integuments over the diseased region were not at all discoloured, and the osseous tumour bore pressure with impunity all over its surface, except at one part, that where the injury was directly applied, in front and towards the articular surface of the bone; the patient could not, of her own accord, flex the leg upon the thigh, beyond a very obtuse angle, the position in which she endeavoured to keep it, as affording most ease and rest; however, I could perform flexion at the joint to fully a right angle without inducing pain; at this time the joint structures around were thickened, and the internal condyle of the femur considerably more prominent than the outer one, yet pressure could be borne here also without eliciting much suffering; the circumference of the limb, both beneath, around, and above the joint, exceeded the sound one by three, two, and one inch, in each of these respective positions. At this time every means were employed to allay pain, to procure rest, to build up the enfeebled health, and, if possible, to check the progress of the affection. The case, however, went on, being but little restrained by treatment; this became quite apparent in about a fortnight, the additional enlargement being most manifest over and around the site of the original tumour upon the tibia; the pain referred to this part was most acute; no local application seemed to have much effect in either mitigating or lessening its duration; the most powerful sedatives—watery extract of opium and extract of belladonna, made into a thick paste, separately or together, and applied over the surface, soon lost their effect in diminishing the burning pain when at its height; another peculiar feature in the pain was its absence, sometimes for short periods altogether, when suddenly it would set in in its most aggravated form. The nature of the tumour, even at this early time, was accurately diagnosed, and lectured upon to a large class of students, and at this period the proposal of amputation at the thigh was urged upon the patient, but to this she would not listen.

Several weeks passed on, and the tumour steadily enlarged in all directions; the pain seemed less acute, often absent for many hours; with this release from intense agony, her general health assumed a better aspect, she ate considerably more, she often had quiet and refreshing sleep for some hours at a time, induced no doubt by the exhibition of sedatives, but only in such doses as that failed entirely at an earlier period of the case in suspending pain or procuring rest; so rapidly did the tumour increase, that from day to day the augmented bulk was perceptible to all; it seemed indiscriminately

to seize upon all surrounding structures; the ham soon became filled up, and almost bursting; the tension in this locality was extreme, and the strained integuments bright and shining; the whole leg and foot became enormously swollen, with hard, firm, œdema, and so great and unmanageable by its bulk as absolutely to cause extensive ulceration on its outer side, from its weight when supported and resting on pillows; as the disease progressed, no other position but that adverted to could be endured, so ponderous had the entire member become that the patient had to lie partially turned upon the right side, the limb partly flexed, the thigh upon the pelvis, and the leg upon the thigh, all equally sustained upon pillows; this was the constant attitude maintained up to the period of operation. At this date, a few days before operation, the measurements of the limb were as follows:—

1st. Around the knee, at the angle of flexure, thirty-five inches.
2nd. Around the thigh, at its centre, eighteen inches.
3rd. Around the leg, just below the joint, twenty-one inches.
4th. Around the leg, just at the calf, twenty inches.
5th. Around the ankle, thirteen inches.

The accompanying beautiful plate, executed by Foster from a photograph by Robinson, will give, at a glance, the proportions of the limb; it was sustained in the elevated position delineated, by a bandage tied above the knee, and fastened to a fixed support, on the other side of the patient.

So completely did the weight of the tumour chain the patient to the one position, that it was with great difficulty she was kept from stripping; the constant application of nitrate of silver, and of strong oak-bark washes, with alum and tannic acid, together with well adapted cushions, prevented so grave and distressing a complication; and now her pains became more marked, developed, and persistent, independent altogether of her movements being restricted—and faster and more rapidly she was overburdened and surrounded by distress, without any possible hope of amelioration or repose; and so, now, she fixed her whole hopes of relief upon operative interference—that refuge, which had been at an earlier period so pressed upon her for safety—when safety and security for a time at least was surely certain—for the same risks did not then hang around the case, and amputation might have been performed at the middle of the thigh, or as I should prefer to advocate higher up, with every prospect of success and recovery; but in the condition of the patient in this last stage, now, at this period, when she would only assent to

operation, when she absolutely pressed hard for even a chance of escape from her miseries, and her sufferings, and her impending fate; no operation was applicable, but the removal of the entire limb—the thigh bone, from the socket—the separation of the whole polluted member from the trunk—for the soft parts were contaminated, infiltrated, and diseased, far up beyond the knee; and the articular surface and lower part of the femur were extensively implicated; the consideration of these well ascertained facts settled the question as to disease of the thigh. The groin was free from any glandular enlargement, there was no puffing, or more correctly, infiltration of the integuments here, or morbid state of the veins or lacteals of the region. The chest was subjected to the most careful stethoscopic examination; the lungs were remarkably healthy, resonant, and clear throughout; the heart normal in its proportions—vigorous, steady, and equal in its beat; the abdominal cavity was likewise submitted to careful inquiry, and no change could be discovered either in the solid or soft viscera; and, I need scarcely add, among the former the liver was subjected to the strictest scrutiny and most delicate manipulation. As no aberration from a healthy state in any of these organs or regions could be detected, and as the woman's whole heart and confidence were centered in the expediency of operation, I willingly assented to her wishes, and, after a deliberate consultation with my able colleagues, determined to remove the limb from the hip-joint on the following morning.

February 12th.—The patient was brought down from the ward in which she lay to a small room beside the operating theatre, and used for the reception of patients after being operated upon.

I shall digress for a moment while I describe the arrangements I conceived necessary to be made in the theatre:—First, as to the table, it should be higher than for ordinary operations—I conceive about four feet high; such an elevation will afford the surgeon great facility in securing the vessels in the posterior flaps, and rapidity in this part of the procedure is of the utmost importance, and should never be lost sight of. Should the operator find it inconvenient to transfix the limb with accuracy, sustained at such a height, he should raise himself by standing on a solid wooden support, so that he should have full command over the parts, and not be restrained or checked in using the knife according to his will and judgment; again, the table should be narrow, so as to allow the operator and assistants to be near their work, and so act vigorously, and in concert together; a folded blanket should take the place of

the mattrass, and be evenly turned back upon itself, at the end of the table, so as to present a well-defined edge upon which the buttocks of the patient will rest without a chance of slipping; and a couple or three pillows will be requisite to sustain the head and shoulders of the person. Matters being so prepared, the patient was placed under the influence of chloroform before she was brought into the theatre, and placed upon the table, perfectly calm and insensible; she was brought well down to the end, so that the buttocks projected slightly over it; the affected limb being the right one, the assistants were placed, as follows:—One to make pressure on the femoral artery, standing on the left of the patient; one to take charge of the anterior flap, standing on the left of the patient; one to hold back the left leg, and to prevent the pelvis slipping forwards or to either side, standing on the left of the patient; two kneeling, one on either side, to grasp the posterior flap, as the limb was cut free; and one to support the diseased member, and to move it as required in the different steps of the operation; an assistant was also placed to restrain back the shoulders, and so effectually to guard against the patient gliding downwards and slipping off of the end of the table; so that, according to my arrangement, six assistants are required, independent of one, who must continue to administer the chloroform. Now, let me not be misunderstood, because I recommend so many assistants, and so accurately place each, that I would not proceed to execute the operation with half the number if the exigencies of the case demanded it, and that such confident support could not be procured; I have laid down the rule according to my judgment, when it can be carried out, and must of course leave room for the exceptions which will sometimes occur, and must be acted upon, and with great propriety; sooner than all hope in relieving the sufferer should be abandoned, I have before now with one assistant successfully amputated the right arm, high up, under great disadvantages, grasping the limb myself and suppressing hemorrhage with the left hand, while my assistant steadied the diseased member during its severance from the body and tied the vessels as I drew them out by the forceps or tenaculum. The assistants being arranged as already described, the limb was elevated high up for a few minutes, to diminish as much as possible its contained quantity of blood, and lessen the inferrent current; soon then a bandage was rolled very rapidly from the foot upwards, and applied very tightly above the centre of the thigh, as a preventative to guard against a rush of blood from below during the formation

of the flaps; then the limb was depressed to a suitable angle, the thigh slightly flexed upon the pelvis, so as to permit the fair travel of the knife behind the vessels. Standing on the right side of the patient, well over her—and pressure being *now* safely made effective on the main artery, just above the pubes, the assistant using a large key, well guarded with rolls of flannel round its handle, for the purpose—I entered a long double-edged knife, fully twelve inches in the blade, and three-quarters of an inch in depth, midway between the spine of the ilium and upper edge of the great trochanter, about three-quarters of an inch nearer to the former, the flat surface of the blade looking forwards, and a little downwards, parallel with the plane of the muscle; striking the knife steadily inwards, till it touched lightly the neck of the bone, high up, and so accurately giving evidence of its position, it was glided over the bone, and so safely beneath the great vessels; still onward the blade was passed till it appeared on the inner side of the thigh, and protruded about an inch and a-half between the point of junction between the descending ramus of the pubes, and the tuberosity of the ischium; the knife was then carried rapidly downwards, close to the bone, for four inches, and then obliquely forwards, cutting loose a flap about six inches long; as the knife made room I passed the fingers of my left hand beneath the flap, making steady pressure, and followed the knife until about to turn it forward to sever the femoral artery, and cut its way out, thus making certainty of effective pressure; the flap being so formed the assistant took charge of it, and in a similar way commanded its vascular supply. During the formation of this anterior flap, while the knife was traversing as it were in a semicircular course, the limb was not only slightly flexed but a little rotated inwards; after this the limb was forcibly abducted, and at the same time depressed. Then the heel of the knife was laid determinedly upon the capsule, over the neck of the bone, and its head unhesitatingly started from the socket of the acetabulum, and then as rapidly as thought, the blade of the instrument was carried behind the bone and great trochanter—severing the round ligament, and completing, by a slight downward movement and then backward, the posterior flap; as the knife formed it, and it became detached, it was firmly grasped both within and without by the assistants kneeling on either side. When the head of the bone was disarticulated, and the knife rapidly passing behind, the assistant who held the limb depressed the knee, and lifted at the same time the head of the bone forwards and

upwards, and so facilitated in a marked way the transit of the instrument in the course sought for and prescribed. My able assistants, Drs. Jameson, Bevan, Ledwich, and Mason, were so experienced and steady in all their duties and movements that they permitted me to execute the detailed steps of this operation, and so sever the limb from the body in the period of eleven seconds. The next step to be considered was the securing of the vessels. Now, the pressure upon the femoral trunk was so admirably and efficiently made by Dr. Jameson, and all the vessels of the anterior flap so perfectly controlled, that I at once set about securing them in the posterior; in this dissection, too, the hands of the assistants fulfilled their work: three large trunks were secured of the gluteal artery, one of them in the outside angle, remarkable for its size, retracted deeply, and had to be dissected out from its bed, and tied; the sciatic artery was likewise remarkable for its size, and carefully disentangled from its important nervous relations—and secured; four large arteries were drawn out, and tied, towards the inner side of the flap. During all this careful procedure not a spoonful of blood was lost, so efficiently did the manual pressure exert its control; finger after finger could be raised up, each giving special information of where a vessel demanded vigilance, and required to be ligatured. All behind being fairly secured, and a large sponge wrung out from hot water applied steadily to the surface, I proceeded to deal with the anterior flap, and first tied, with a strong silken ligature, the femoral artery; and afterwards three large vessels, branches of the profunda—and a fourth which I considered to be the obturator; three vessels of smaller size were likewise tied; though numerous the arteries requiring to be tied, it was very remarkable how readily the task was accomplished, and during the whole operation scarcely an ounce of blood was lost; in fact it was a bloodless operation so far as any hemorrhage on the cardiac side was concerned; of course some flowed from below the selected points for division, independent of the strenuous efforts which had been made to unload the doomed member of some of its contents, by maintained elevation, previous to operation, and then its sudden forcible constriction after the main supply was cut off by pressure at the groin, and before the knife was applied. During all this time the patient lay perfectly still and quiet under the influence of chloroform, and I let her rest upon the operating table for ten minutes, warm sponges being assiduously applied throughout the wound. At the end of this time reaction was fairly established,

and all pressure removed from the arterial supply to the stump, and as no vessels showed a disposition to bleed, I had the patient removed to her bed, in the small ward, beside the operating theatre, and when comfortably laid upon it, the flaps were evenly supported thus: a small soft pillow was laid beneath the posterior one, upon which rested a large piece of oiled lint, this pillow was so gradually insinuated behind that it evenly supported steadily forwards and upwards the pendent part; the anterior flap was gently turned upwards, and being of considerable length it rested so without constriction; in this condition the surfaces were left to glaze. During all this latter arrangement the patient was quite conscious; she was not aware that the operation had been performed, and never recollected having suffered any pain; it certainly was a wonderful sight to witness this creature, after so formidable, so terrible an operation—calm and undisturbed, and free from suffering—speaking cheerfully—the effects of the chloroform having entirely, at this time, passed away; she got wine liberally, and a full opiate; twenty drops of Battley's sedative.

At 4 o'clock, p.m., assisted by Drs. Jameson and Bevan, I proceeded to dress the wound; and I may now remark at this hour, six after the operation, the patient had well rallied; the pulse being up and steady, 96 in the beat; heat of skin healthily generated; the tone and volume of the voice good; and the patient, on being interrogated, stated she felt more comfortable than she had been for several months before, and was quite cheerful. I may remark that the stump lay upon the pillow, sustained just as we had left it; there was no tremulousness or wavering spasm of the flaps to distort it from its place; there had been no weeping of blood, and the entire surface of the flaps was well glazed; this favourable state of the parts may be assigned to wine and opiates, which she had freely partaken of, and to the occurrence of some sleep which had been early induced by opium. The precaution taken of having interposed oiled linen between the under flaps and the pillow upon which it rested, and between the integuments of the upper one and the surface upon which it lay—the base of itself and the lower part of the abdominal wall—cannot be over-estimated, as facilitating the ready approximation of the surfaces without violence; the withdrawal of the oiled linen at once set free the parts, and so allowed them, by the greatest gentleness, to be brought in contact. I may mention that the flaps were well glazed, and not a trace of oozing from them anywhere, and there were no dark clots in the interstices of contracted

fibres. Twelve points of the interrupted suture, silver wire, being employed, steadied all accurately together; the outer angle was not closed; a narrow strip of oiled lint was passed in deep, in this locality, to secure an outlet for any exuded fluids; a few broad straps of adhesive plaster were then gently applied from behind forwards, supporting a compress behind and before, bringing the parts accurately together, throughout the whole depth of the wound, surface to surface; a pillow was again placed beneath the buttock, with a gentle force, sustaining forwards and upwards, commensurate to counteract retraction, and the effects of gravity shortening the posterior flap; while the anterior one by this arrangement, this support, was effectually steadied, and its vascular supply neither impeded or interfered with; the several ligatures were brought out by the nearest route, through the edges of the wound, and protected by a few straps of plaster; the patient was dressed without pain of any amount, and without the least spasm or muscular twitchings, or effusion of blood; a good deal of this immunity from suffering must be ascribed to the gentle, efficient, and practised hands of those gentlemen who assisted me. Ordered some strong chicken broth to be given at intervals of every second hour, and a little cold brandy and water immediately after; also, every third hour, fifteen drops of Battley's sedative. 10 p.m.—Nothing could be more satisfactory than the condition of the patient at this time; she had refreshing sleep, often for an hour undisturbed, and partook freely of broth, wine, and brandy; the opiates allayed all pain; her pulse was only 96, steady in its beat; and with fair volume, she expressed herself as most thankful for the relief she experienced, and was quite bright, cheerful, and expectant of recovery; ordered to continue the beef-tea and chicken jelly whenever awake throughout the night, and the opiate every third hour.

February 13th, 9 a.m.—Had a remarkably good night, sleeping steadily and quiet; took a large quantity of nutriment and stimulants with eagerness and appetite; this morning she looks bright and happy, and says she is free from pain; occasionally a slight spasm in the stump, but it is not severe, and yields in a few moments; her pulse is steady, 96, and the beat of good volume; skin a little hot, but not burning; renal secretion abundant, but incapacity of voiding the vesical contents, effected by the catheter; no tenderness over abdomen, or in the right iliac region, upon pressure; the stump looks admirably; it is sustained and supported without the least

change from its position on last evening; it preserves a nice temperature, and along the whole track of the anterior flap the heave or beat of the femoral artery marks its course. A considerable quantity of sero-sanguineous fluid has escaped from the outer angle of the wound, and along the lint placed between its edges, to insure a ready egress; there is no puffing or tightness of the wound; the flaps seem just sufficiently full to show that the vascular supply is enough for repair, and the heat equivalent. I may here remark, nothing can be more dispiriting to the surgeon than to see, in twenty-four or thirty hours after amputation, a flaccid condition of the flaps; it shows a want of vitalizing power, and at the least is anything but salutary towards the speedy recovery of the patient; as to the treatment of the patient it practically speaks, too; such a condition demands a more rapid and abundant supply of stimulants and opiates; and I do, with confidence, say (not assert) from observation and experience, that I have seen many in this most critical position, rescued and saved by the means suggested; the two harmonize together—the one in arousing the sensibility of the nervous centres, and the heart's action, and so the proper supply of blood to the injured part; the other in quieting irritability and spasm of the muscles, and allaying pain. To continue wine, brandy, and nutriment, as already directed, and likewise the sedative draughts. 5 o'clock, p.m.—The patient is quite calm and free from pain, and has taken an abundant quantity of beef-tea and jelly; she has had quiet sleep since morning, and, on the whole, is wonderfully well; pulse 98; urine abundant, and still requires the introduction of the catheter for its escape; the stump lies perfectly at rest, the sedative influence of the opium averting all tendency to spasm; and it looks healthy, a quantity of watery fluid escaping at the outer angle. 9 o'clock, p.m.—No change to be recorded; nutriment, stimulants, and sedatives to be continued through the night.

February 14th, 9 a.m.—Slept well; countenance calm; free from all pain; pulse 98, regular and full in its stroke; tongue clean; bowels moved once, and urine flowed at the same time, by the efforts of the patient, and in considerable quantity. Readjusted the pillows under the stump, and gave the hinder flap a little more support forwards, by additional straps of plaster, those first put on having relaxed a little, from heat and moisture, owing to the persistent flow of pus and watery fluid through the outer part of the wound. Beef-tea, chicken jelly, wine, and opium to be given as before. 9 p.m.—Has had a quiet day, and consumed a large quantity of nutriment; it

tells well, for her pulse is stronger, more steady, and fuller in its beat, than before the operation; and altogether her appearance is far better; the anxious countenance, and the glazed eye are gone, and the expression is one of rest and peace; she speaks confidently of her recovery.

February 15th, 9 a.m.—The patient had quiet sleep, waking at intervals to take food and medicine; feels stronger; and took, for breakfast, some tea and toast with appetite; pulse 98, with full and steady beat. This day, the third after operation, I proceeded to dress the wound; the parts, being steadily supported behind and before, more particularly with a gentle force forwards; the adhesive straps were, with great caution, removed, and the oiled lint from the line of incision; to facilitate their removal a flannel stupe-cloth, wrung out of boiling water, had been laid over them for two hours previously; the external dressings being taken away, I very cautiously drew out the piece of lint laid within the outer angle of the wound; this came away readily enough, it being saturated with serum and pus from the beginning until now; a free escape of healthy pus followed, on pressure being made towards the bases of the posterior flap; three-fourths of the edges of the flaps were perfectly united, and lay beautifully together, no irritation or strain being in the least degree evidenced about the wire sutures, in any of their points; indeed this could scarcely be otherwise; the anterior flap was preserved in such full proportions; the parts all around the wound were well cleansed, and sponged with soap and tepid water; and the dressings readjusted as before. Caution was taken to sustain well forward the posterior flap, and compresses evenly applied, and gradually diminishing from behind forwards, laid on, to carry out efficiently this intention. The patient was next gently lifted from the bed, in the horizontal position, by a number of students, and fresh sheeting, pillows, &c., put upon it; upon these the creature rested most comfortably, expressing her gratitude for the relief she experienced. It was astonishing how little fatigue was consequent upon this trying task; the patient spoke well, and audibly; the pulse was not flurried; neither were the respirations embarrassed; she eagerly took a cup of strong beef-tea, and a draught of wine after, and then settled herself to sleep. 9 p.m.—Has had a good day, and seems much refreshed, after the removal of all soiled things from about her; the stump looks well, and she experiences no pain in it; purulent matter, healthy in character, is coming away abundantly from the outer angle of the wound. To continue broth, jelly, wine, brandy, and opiates as before.

February 16th, 9 a.m.—The patient was restless throughout the night, and this morning a good deal of fever present; respiration hurried; pulse 110, and hard; skin hot; a good deal of uneasiness referred to the chest, particularly beneath the clavicle on either side, together with a sense of tightness or constriction beneath the sternum. The wound free from pain, and discharge not arrested; pressed out an additional quantity on the hand being laid firmly towards the base of the posterior flap, and with the same power carried forwards. Ordered calomel, James' powder, and opium in small and repeated doses—the full opiates and stimulants still to be administered, with counter-irritation beneath the clavicles, and a blister over the sternum; also a diaphoretic mixture, with carbonate of ammonia, to be taken at intervals; the nourishment to be persevered in as before. 9 p.m.—The oppression beneath the sternum somewhat relieved; still the breathing remains considerably embarrassed; pulse still at 110, not so hard; skin cooler; no pain referred to the stump, and it looks healthy; to continue everything through the night as directed in the morning.

February 17th, 9 a.m.—The first glance at the patient told how critical was her position; the whole countenance was changed, sunken, and livid; hurried rapid respirations, imperfect; utter prostration, and almost inability to speak audibly; a staring vacant look, and an irritability on being roused to take either nourishment or medicine; with this fatal blood-poisoning, which the condition of the chest and accompanying symptoms too surely indicated, it was most remarkable how little abberration from a healthy state was yet manifested in the wounded part. Five hours had elapsed—the powers of life flagging lower and lower, though sustained as much as possible by the repeated exhibition of stimulants—and now only did the stump show any indication of the shock, the constitutional poisoning. To the educated eye the changes were now being characteristically developed; its full proportions became collapsed and even flaccid; the discharge, which up to this time was healthy pus and in full quantities, now changed its character to a more fluid, discoloured, and even reddish appearance, and materially altered both in consistence and quantity. 9 p.m.—All the poisoning influence of the introduction of pus into the system more clearly developed; pulse weaker—a mere thready beat; yet it is most remarkable the force and volume of voice with which the patient will suddenly scream out—I might almost say with an unearthly shriek. Eyes look vacant, staring, almost without motion of the lids; now

the capacity for swallowing is difficult, but upon a persevering trial fluids can be got into the stomach. Ordered that there should be no relaxation of efforts to convey nutriment and stimulants into the stomach.

February 18th, 9 a.m.—I was informed the patient died at four o'clock this morning; and even up to an hour before her death had swallowed some brandy and water. A careful *post mortem* examination was made of the body. First as to the condition of the stump: it was most remarkable the progress which was made towards repair; three-fourths of the extensive flaps were adherent, perfectly united together, and the outer edges of the wound were in a healthy granulating state as far as could been seen without violence to the parts; from this position, deep too, pus could be pressed out; but neither in quantity to excite apprehension, and but little changed from the marked healthy characteristics of the fluid; on forcibly separating the flaps—and to effect this it required more traction than I expected—the deep structures seemed quite healthy; all the surface of the acetabulum and the tissues surrounding it were coated over with organized lymph and incipient granulating surfaces—in short, nothing could present a more satisfactory appearance, tending to permanent repair.

On examining the ligatured main artery of the limb, a proceeding which I made with the most careful dissection, I found a demonstrative evidence of the facts so ably and clearly inculcated by Jones years ago—the division of the internal and middle coat of the artery—lymph now occupying the site of their division—lymph above and below the ligature, as it rested in its constricted bed of the external coat of the vessel; there was also a solid, well-formed conical coagulum filling up the femoral trunk to within the eighth of an inch from where the profunda artery passed off; this coalgulum was absolutely adherent at its base, and fused into the lymph which had welled up from the internal divided coats of the vessel; it was likewise more firm and fibrous here than towards its upper part, which was softer in its consistence and conical in its arrangement. I found, on the most careful examination, the base or lower part of the column of the plug to be intimately incorporated and adherent to the lining membrane of the vessel for a little more than a quarter of an inch. From the most careful consideration of the condition of the parts I would most assuredly affirm that there was no risk of secondary hemorrhage—in fact the plug was very firmly adherent, and almost tissued in the line, where it was fused into the lymph exuded

from the wound in the internal and middle coats; and it is but reasonable to infer this sealing up of the calibre of the vessel would have been perfected long before the separation of the ligature; beside the tied end of the femoral artery hung collapsed the end of the femoral vein; it had not retracted; and though lymph was abundantly shed around these parts, and had to be torn through to expose them, yet the vein seemed, as it were, excluded from this vitalizing influence and effort at repair; no, the vein "hung collapsed," its edges softened, its coats bathed in purulent matter; on slitting up the vein its lining membrane was inflamed and coated over with pus; on proceeding about two inches upwards its calibre was distended with pus; it was also marked throughout the track of the external and common iliac vessels; pus was discovered, by the microscope, in blood taken from the cava, and pus was discovered in blood taken from the heart. The abdominal viscera were next carefully examined, but no abberration from a healthy state could be discovered—no increased secretion from the lining membranes, or trace of inflammatory action. The chest was next opened; the heart was healthy in its muscular structure and fatty arrangement, and the pericardium showed no evidence of change; more fluid than natural was contained within it—somewhat more than a drachm. The examination of the lungs revealed numerous small deposits of purulent matter; these taken in conjunction with the condition of the femoral and iliac veins, loaded with pus—with the fact of pus discovered in the blood of the cava and in the blood of the heart, can leave no doubt as to the blood-poisoning of the person; this case affords a most remarkable example—the most rapid, in my experience, of pyemia producing its fatal effects in an incredibly short period of time. The rapid improvement of the patient after the operation, the freedom from pain, the cheerfulness and the buoyancy, and the expectancy of recovery—these all combined and appeared to render more certain, day after day, a fortunate issue, and as it were showed that no constitutional symptoms embarrassed recovery; and this constitutional improvement harmonized with the condition of the stump—the extensive wound, which presented throughout its course the most rapid amendment; and yet in a few hours the case is irretrievably lost by a complication that no human watchfulness, skill, or foresight could guard against. The examination of the limb shortly after its removal from the body fully revealed the true nature of the morbid growth as diagnosed during life. The bones implicated were the tibia and lower

extremity of the femur; they suffered to about the same extent from the malignant action—clearly from the history of the case, having its commencement in the former and spreading to the latter, with the implication of all the structures intervening and around; the head of the tibia was largely expanded, the inner and anterior wall of the bone been all eaten away, and filled by a large fungous mass, a deep and fixed portion of the general growth. The femur suffered likewise in the same way—all its osseous material entirely disintegrated and removed—except a remnant of the external condyle; a kind of elastic cartilaginous structure replaced it to a great extent; this structure, too, being peculiarly modified in certain places; in some true encephaloid cancer being deposited—soft, elastic, brain-like; in others sharp spiculæ of bone radiating from certain points, and diffused throughout the growth in greater or less masses. The lower part of the thigh and in the upper part of the calf it was impossible to recognize the muscular tissue; all had either been absorbed by the pressure from within, or more probably seized upon by the morbid action, and converted into malignant structure; the tumour, where most prominent and in large masses, was firm in structure, and presented in many parts a lobulated arrangement varying in vascularity; in some parts brilliant with red vessels, in others of a dark modena colour, while here and there scattered throughout were some soft points, even fluctuating, caused by broken up vessels; and in others masses of hard spiculæ of bone structure; the deeper portions of the growth, and all in proximity with the bones, presented the greatest density and immobility, while the more superficial parts were softer, more elastic, and channelled for the passage of larger venous trunks.

Two of the greatest authorities in Surgery have accurately described this form of tumour—the one in France, the other in England—each by a different name.

M. Boyer illustrates his views by a remarkable case, almost similar to mine, in his great work (*Traite des Maladies Chirurgicales*, Tom. III., chap. XXI., Art., IV.), and observes:—"Nous réserverons la dénomination d'ostéo-sarcome pour la degénération du tissu osseux qui paroit se rapprocher le plus de l'altération et de la marche propres au cancer. Tout ce que nous avons dit precedemment sur le traitement du cancer, s'applique sans restriction a celui de l'osteo-sarcome: anisi l'art ne connoît aucun moyen d'arrêter les progrès de l'ostëo-sarcome une fois qu'il est déclaré, et l'on ne peut opposer â cette cruelle maladie que l'amputation du membre, ou

bien un traitement palliatif." Sir Astley Cooper describes the disease in these words:—"By the fungous (exostosis) is to be understood a tumour of softer structure than cartilage, yet firmer than fungous in other parts of the body, containing spiculæ of bone; malignant in its nature, depending on a peculiar state of constitution and action of vessels; a disease somewhat similar to that which Mr. Hey has denominated fungous hematoides, but somewhat modified by the structure of the part in which it originates."—*Cooper and Travers' Surgical Observations*, Vol. I.

The formidable nature and dangerous tendency of the malady under consideration is borne ample testimony to by those celebrated men whose views I have quoted; and the case which I have detailed myself is perhaps as remarkable as any on record, for the rapidity of its growth and in assuming such huge proportions in a short time. Looking from the first upon the characters, the beginning, and growth of this disease as malignant, I applied the same rule of interference, the same law that should direct the surgeon as to operative measures when the same type of disease presents itself in other parts, namely—its entire removal, its severance from the body, through healthy, sound, normal structures. In malignant disease attacking the bones of the extremites the surgeon should always if possible, amputate *at* or *above* the next joint. I have said "at" if the condition of the soft parts will allow him; if not, then "above," away from the diseased contaminated parts, both soft and solid; under any circumstances I do not think it prudent to leave any portion of the affected bone behind; and though its lowest extremity be the part engaged I would urge the propriety of its removal *from* the joint above were even the integuments surrounding the bone above apparently ever so healthy. I have no doubt, from observation, experience, and even microscopical examination—the latter testified too by able hands, from specimens afforded by me for examination—that malignant disease once established in the end of a bone creeps through the bone structure, seizes upon and contaminates the medullary lining membrane, far away from the original seat of the mischief, long before the integuments show any indication of the pollution beneath; therefore, I repeat, the entire bone should be removed; I have laid down this point as an aphorism, and were it necessary I could adduce several instances, both in hospital and private practice, where such caution has acted efficiently, preservatively, in saving the patient for years from any return of the disease. From many facts accumulated I had no

hesitation in arriving at the conclusion of the propriety of the removal of the limb from the socket in this case; and though the patient did not survive, yet ample proof has borne testimony to the propriety of the measure; the release from suffering, the improved condition of the patient for several days—the increased strength, the inspired confidence of the sufferer, all point to the benefit obtained; again, and speaking far more forcibly in favour of its application, were the changes wrought in the wound, the greater part united by first intention, all the deeper parts agglutinated with adhesive organised lymph—pus from the granulating surface, healthy, and with ready access to the surface—the main artery of the limb sealed up, permanently and for ever—showing altogether a combination of circumstances and facts the most remarkable that could be adduced towards the salvation of the patient. The benefit derived from chloroform in this serious operation cannot be overlooked; all shock was removed both from apprehension of suffering, ineffectual struggles, and absolute pain; the patient was quite unconscious that the operation had been performed, and had no suffering at any time. A question has arisen as to the propriety of securing the main artery of the limb in the first instance; it is not at all necessary if the precautions such as I have laid down are carefully followed out; neither do I think the pressure on the abdominal aorta, no matter how effected, by tourniquet or otherwise, is at all to be depended on with the same trust as pressure at the groin, on the main artery of the limb, and the judicious arrangement of assistants to grasp the flaps, in front and behind, as the knife pursues its course; this practice is strictly enforced, as I would wish to inculcate from the case that I have detailed. I freely admit the horseshoe-shaped clamp or Professor Lister's tourniquet upon the abdominal aorta—and another, if considered necessary, even on the iliac vessel, may be advisable when trustworthy attendants cannot be procured—and where, in spite of all obstacles, a bold and dexterous surgeon is determined to give his patient the last advantage from his art; but I deny altogether the superiority of the mechanical contrivance to effect the object in view as contrasted with the educated hands of men trained in operative surgery. However, Professor Lister's clamp has acted most favourably in many cases, and I must not omit pointing out the high praise Mr. Erichsen bestows upon it (*Lancet*, Vol. I., 1866, p. 223); and I am quite convinced the instrument should be in the possession of every operating surgeon. Now there is one point to

which I have not referred in the division of the vessels, and the troublesome consequences that may follow if not attended to; I mean where hemorrhage is persistent from the femoral vein. In amputations of the thigh, high up, I have often been troubled with it; and when neither plug or adjustment of flaps would check it, have invariably pursued the practice, in the last few years, of passing a wire suture, by means of a tenaculum, with an eye near its point, through the skin, beneath and around the vein, and through the integuments in the opposite side of the vessel to where the instrument entered; thus the vein was pressed up by the ligature against the integuments, and a few twists of the wire perfectly controlled the flow of blood; the ligature was uravelled and withdrawn in twenty-four hours; and in no instances was there a return of this untoward complication. Should such a result take place after amputation at the-hip joint I would strongly advise the adoption of this simple method, which I have found so effective in other cases, much in the same class, rather than put a ligature on the vein. Throughout the whole history of this case it will be seen there was progressive improvement for several days; the shock was avoided by the exhibition of chloroform—the hemorrhage guarded efficiently against; scarcely an ounce of blood was lost; quickly and rapidly all vessels were safely secured; the stump was dressed with ease, and without pain in some hours after being left to glaze; the, flaps were adjusted, bound together with wire sutures, and retained more permanently and throughout in contact, with adhesive straps and compresses; days past by; the patient regaining strength and cheerfulness, with all hopes of recovery, when suddenly pyemia becomes developed, a complication that never could have been anticipated from the favourable course of the case, yet, surely and steadily, and without compromise, it pursued its unrelenting course, poisoning the springs of life; but fortunately for our science and our art, the changes produced upon the wound are conclusive as to the reparative efforts which may be looked upon and expected with certainty, even under such trying circumstances, in so fearful an operation. From what has been stated it will be seen that the soft parts were all nearly united together; that the main artery of the limb was sealed up and blocked, beyond any danger of secondary bleeding; that the discharge was very small, and the entire granulating surface was healthy; in fact all the dangers of this great operation were overcome, when suddenly a complication that may arise from the simplest wound presented itself—the absorption

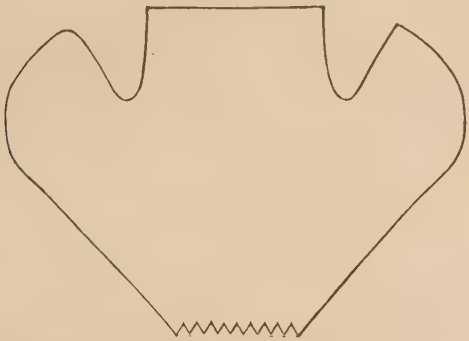
of pus into the system; and so this woman perishes. This disheartening sequence to an operation, correctly conceived, judiciously carried out, and affording such demonstrative proof, from the *post mortem* examination, of the salutary changes brought about in the divided parts, can never militate against its advantages or lessen the ardour of true surgery, but must rather impress the mind of every thinking observer, of every practical man, with the powers of operative surgery to save, when all other powers are abortive in rescuing the sufferer from pain and death.

Art. VIII.—*Contributions to Operative Surgery. Part I.:—Operations about the Face.* By Maurice Henry Collis, M.B. Univ. Dub.; F.R.C.S.I.; Surgeon to the Meath Hospital and County Dublin Infirmary; Sometime Examiner in Surgery to the Queen's University in Ireland, and Member of Council of the Royal College of Surgeons in Ireland, &c.

1. *Lupoid Destruction of Nasal Cartilages, with Occlusion of the Remainder of the Nostrils, and great Deformity; Rhinoplasty.*—Peter Leahan, aged twenty, was admitted into the Meath Hospital early in March, 1865. He had suffered for many years from lupoid ulceration of the nose, and to a slight extent also of the cheeks. By a varied line of treatment I checked the spread of the disease, and ultimately got the ulcerated parts to cicatrize. Lupus requires much patience, as all surgeons know, and I fear we too often do not pay it a sufficiently close attention; we weary of it, and the patient perceives this, and wearies of us. It is certainly a most tiresome ailment; but yet, by patient watching of its varying phases, and adaptations of remedies to suit each change in its condition, we shall generally succeed in curing it in the long run. In the present case I used iodine locally during the cold weather, and changed my hand for soothing applications according as the harsh winds of Spring subsided. I finally healed the ulceration with a lotion or paint composed of a drachm of watery extract of opium to an ounce of water. This was applied frequently through the day; by the beginning of May there was complete cicatrization of the ulcer and entire absence of new pimples or tubercles in the surrounding skin. Accordingly on the 12th of May I set about repairing the deformity of the nose. I first cut a piece of adhesive plaster into the form of flap, which I purposed raising

from the forehead. The outline of this flap is given in Fig. 1.

Fig. 1.



I measured this flap accurately, so as to adapt it afterwards to supply the deficiency of the nose, allowing for the subsequent shrinking of the material by absorption of the subcutaneous adipose tissue. I now pared the edges of the nose, or rather of its stump. I found but little of the cartilages left, except in the median line, where a very fair amount of cartilage still remained, compared with what was left of the alæ. I now placed the piece of adhesive plaster upon the forehead, the expanded and deeply-notched margin being laid as close to the hair as possible, so as to leave a long pedicle. This mode of outlining the flap has an advantage over ink or other materials, inasmuch as it does no harm to the flap or its margins, nor does it stain the cicatrix as ink will do. I now cut out my flap, removing only the integument and subcutaneous fatty tissue, and such muscular and aponeurotic fibres as were intimately connected with the skin. I did not require any new bone in the nose, as the nasal bones were not implicated, and consequently Langenbeck's plan of raising the periosteum in the flap was not needed. The flap was now twisted round and applied to the raw surface prepared for its reception. This part of the arrangement is facilitated, and the healthy circulation of the flap ensured, by prolonging the incision an one side down towards the angle of the eye, along the wrinkle or groove which is made in that spot during the action of frowning. I always make this cut towards the patient's left eye, turning the flap round by the right; this is simply more convenient to my hand, but either side will do. The flap was now fixed in its place by a number of fine sutures placed from two to three lines apart. On one side I used fine silk, on the other silver wire. I did this to test their relative value. The

result was that I had to remove the silk threads in forty-eight hours from rapid ulceration, while the wire remained in for a week or longer without producing anything beyond the most trivial suppuration; but in the end there was no mark along the side where silk was used, while the cicatrix on the side where wire was used was marked, and remained red and elevated so long as the patient remained under observation. This point is deserving of note.

It will be perceived that the centre of the flap (the portion which was to complete the columna) was made much broader than usual. This is an improvement for the knowledge of which I am indebted to my young colleague, Mr. Stokes, whose interesting paper on Rhinoplasty will be found in the pages of this Journal for May, 1865. The object of this breadth is to enable us to form a substantial columna at the same time as the rest of the nose. All went on well in this case; the flap adhered throughout, and except that there was a tendency in the nostrils to contract, the new organ could be said to be almost perfect; however, an occasional plug of seaweed kept the nostrils patulous. On the 14th June I divided the pedicle, and in a few weeks after he left the hospital exceedingly proud of the improvement in his personal appearance. In Plate I., Figs. 1 and 2, there is a faithful delineation of the appearances in this case before and after the operation. The drawings are from photographs by Forster, of Westmoreland-street, who has on many occasions assisted me signally in preserving records of my cases in this necessarily accurate manner. Copies of these photographs are deposited in the Meath Hospital and in the library of the College of Surgeons.

2. *Epithelioma of the Nose; Third Stage, Frightful Deformity; Removal of Diseased Portion, and Indian Rhinoplasty.*—Mrs. Shea, aged seventy-five, was admitted into the Meath Hospital early in March, 1866, for extensive epithelioma, which had caused destruction of the alæ of the nose, and great deformity (Plate II., Fig. 1). She stated that nine months before her admission into hospital a small wart upon the side of her nose began, after years of quiescence, to annoy her. She picked it, and it rapidly grew larger. In a wonderfully short time it had destroyed much of the skin, and had commenced to spread under the margins of the ulcer thus formed. The drawing gives a good idea of its condition when I first saw her. There were two large ulcers running into one another, with the usual

PLATE 1.

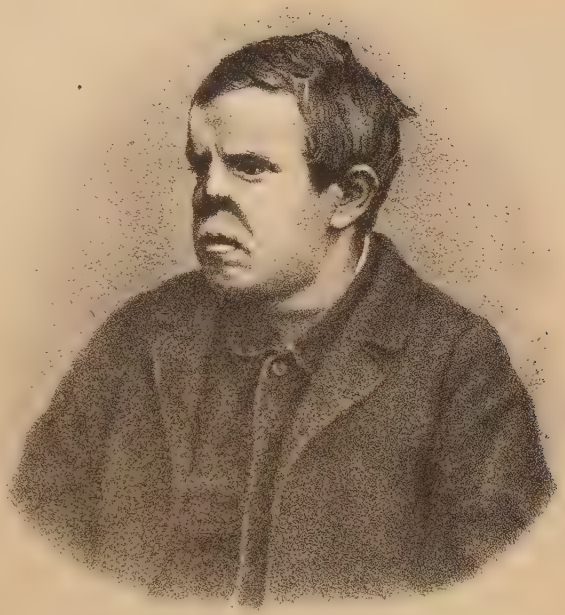


Fig. 1.

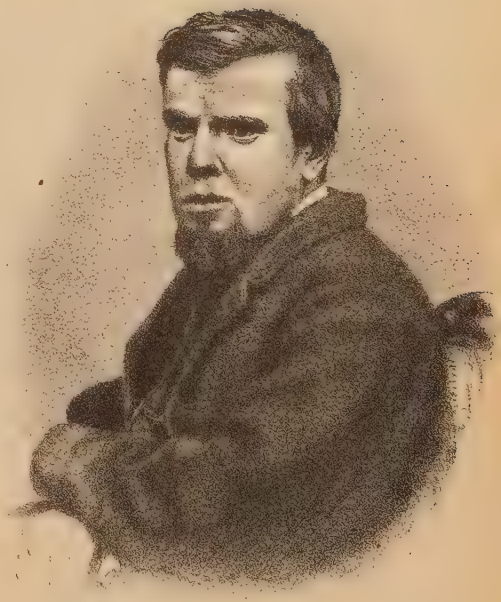


Fig 2.

MR MAURICE COLLIS'S CONTRIBUTIONS TO OPERATIVE SURGERY

Pim Bros & Co Lith Dublin.

PLATE 2.

Fig 2.

Fig 1

MR MAURICE COLLIS'S CONTRIBUTIONS TO OPERATIVE SURGERY.

Fitzpatrick Bros & Co Lith Dublin

warty floor and irregular hypertrophied margins. The amount of hypertrophy was very remarkable. Fortunately the ulcerative process had spared the very tip of the nose, so as to leave an appreciable amount of the columna sound, and a small piece of each ala nasi. The disease was as yet local; the glands about the parotid region and the neck were free from contamination. She suffered much pain and occasional hemorrhage to a slight extent; the purulent discharge, as usual, was foul and profuse. The spread of the disease was rapid; the woman's general health was excellent, and in spite of her advanced age I gave her the chance of a prolonged life and freedom from much misery which an operation afforded. She was most urgent for the removal of the disease, independent of any idea on her part that I could restore the organ to a tolerably respectable condition, so that when I promised to give her a new nose I had no peace until I redeemed the promise. March 14, having chloroformed her, I removed the entire mass, sparing the extreme tip of the nose and the free margin of each ala. The infiltration of epithelial tissue had extended deeply into the cartilages, so that with the exception above stated all had to go. Upwards my incision extended to the middle of the nasal bones. I had thus a triangular gap one inch and a quarter in length to fill up by a flap taken from the forehead. Owing to her forehead being very low I had some difficulty in getting enough skin free from hair; however, by taking it a little obliquely I managed to get what did very well; and twisting the flap round I fastened it in its new berth by horsehair sutures inserted very close together—not more than three lines apart, and in some places as close as two lines. The flap, which became very blue and cold, was covered with the softest cotton; wine and opium were administered, and a little hot punch. I should mention that in dissecting up the flap the greatest care was taken not to handle it needlessly. Had it experienced any rough handling I have no doubt it would have sloughed. As it was, it recovered its colour and warmth in a few hours, and in the end united throughout without the smallest sloughing. The sutures were removed according as they seemed to have done their work—some in a week and others not for a fortnight. The pedicle was divided on the 13th April, and soon afterwards the patient left hospital with a remarkably fine nose. The wound in the forehead healed rapidly, and had almost closed by the time the photograph was taken, five weeks after the operation. See Plate II., Fig. 2.

It may be objected that such an operation was uncalled for at the patient's advanced age, and that from the rapid growth of the disease relapse was more than probable; also that at her age the risk of failure was great, owing to the low vitality of the skin. Of these objections the last is the only one that seriously touches the question. As regards the patient's age I found that she considered it no obstacle; and indeed from her hale appearance and the rapidity of the healing process, I think she is as likely as not to live to ninety. Certainly she was as anxious to be rid of her disease as any girl of nineteen. Looking on epithelioma of the skin as a perfectly local disease at the commencement, and only in a very minor degree liable to relapse if freely and perfectly removed, and seeing that there were no glandular enlargements, I deemed it improbable that we should have any relapse. I have often removed epithelial growths even at advanced ages, and I have seen so few cases of relapse while the disease was confined to the skin that I have not the dread of relapse which some who have written upon the subject appear to have. In the present case relapse could hardly make matters worse than they were, and to refuse to operate lest a relapse should occur would have seemed weak and cowardly. I do not know if there be a difference between the epithelioma of England and that of Ireland. Certain it is, that we seldom have relapses from epithelioma of cutaneous or border tissues in this country. I have operated on a man of seventy-two, who is now in his eighty-sixth year, and on many others nearly as old, who remain free from relapse for periods varying from five to ten years, so that age or fear of relapse would not prevent my operating if general health was good. As regards the risk of the flap sloughing, no doubt in the aged this accident is more likely to happen, but this only makes it more incumbent on us to handle the flap as gently and as little as possible during the operation. By supplying stimulants freely and by covering the parts well with soft cotton the heat of the flap is soon restored; nor should such a flap be too early disturbed by attempts to dress it, or by too curious inspection. The result of this case proves that plastic operations of much delicacy will succeed in the aged if due care be taken.

3. *Destruction of part of Upper Lip and Cheek by Cancrum Oris; Great Deformity; Plastic Operation.*—Owen Graham, aged six years, a fine intelligent child, was admitted into the Meath Hospital in June, 1865. When an infant he had suffered severely from cancrum

PLATE 3.

Fig 1.

Fig 2.

Mr MAURICE COLLIS'S CONTRIBUTIONS TO OPERATIVE SURGERY

Pim Bros & Co Lith. Dublin.

oris. The entire thickness of the cheek had been destroyed from the angle of the mouth backwards beyond the molar teeth, and upwards, so as to expose the cavity of the mouth and the gums and teeth. Even when the mouth was closed the deformity was very great. On the 23rd of June I vivified the edges of the gap, detached its margins from the bones so as to give the boy greater power of moving his jaw. Dissecting a long triangular flap from the side of the chin, I turned it up so as to complete the upper lip and close the gap in the cheek. Numerous points of suture held the flap in its place; and as the pedicle contained the main trunk of the superior coronary artery it was well nourished, and it rapidly united. The deformity was very much diminished, and as the boy grows up it will scarcely be remarked. The space from which flap was taken was covered over by drawing the edges together, and owing to the flexibility of the young skin there was no difficulty in bringing about primary union. Similarly the flap, which was of a long triangular shape, accommodated itself to the irregular outline of the gap, and became capable of filling a space much broader and somewhat shorter than the flap had originally been. The drawings give an excellent idea of the appearances before and after operation (Plate III.).

4. *Epithelioma of the Angle of Mouth and of the Cheek—Third Stage; Extensive Destruction; Removal of Diseased Mass; Recovery, and Freedom from Relapse to the Present Date (Eleven Years).*—— Byrne, a baker and gardener, from the town of Arklow, aged about forty-five, was sent to me in the year 1855, by Mr. L'Estrange. He had an extensive ulceration of the left cheek and angle of the mouth; the disease was plainly epithelial, and had gone on to the third stage, namely, ulceration and infiltration. One fourth of the upper and nearly as much of the lower lip was destroyed, and a square aperture in the cheek allowed the teeth to be seen. The edges of the ulcer were thickened and warty, prone to bleed on the least touch, and pouring out a copious and very fetid discharge. The skin all round was infiltrated to the distance of two or three lines; yet the glands were free from enlargement. The disease had commenced in the usual manner, by a fissure with hardened edges at the angle of the mouth; it had taken several months to reach its development at the date of the man's admission into hospital. I removed it early in November, 1855, by an incision which formed three sides of a square. The cut edges when brought

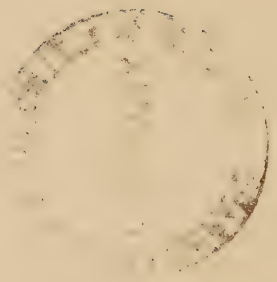
together by hare-lip pins formed a kind of leech-bite wound. They healed rapidly and without any ulceration. The cicatrix, at first firm and thick, became gradually fine, and the cheek and lips, at first somewhat puckered and restricted in mobile power, became in course of years relaxed and capable of almost as much motion and distensibility as before the disease attacked him. He came to see me from time to time, dreading a relapse; it is only within the last two or three years that his mind has been at rest upon this point. In this case I used no special treatment after operation to prevent relapse; he continued to follow his occupations as before, and has been free from illness of any kind up to the present date. The second portrait, taken a few days ago, shows the absence of deformity and the freedom from relapse which signally characterizes this case (Plate IV., Fig. 1). For the great accuracy of these lithographs I am much indebted to Mr. Lewis.

5. *Epithelioma of Angle of the Mouth and Inside of Cheek; Removal of a portion one inch and a quarter square; Appearance of the Disease in a portion of the Lip distinct from that first attacked; Removal of Surface of Lip.*—John Neal, aged sixty-six, also from Arklow, a fisherman by occupation, has had epithelioma of the angle of the mouth for some months; this has gradually extended so as to destroy a large portion of the cheek and to leave a space through which the teeth can be seen. The amount of destruction is about the same as in Byrne's case. April 17, 1863, I removed a mass of disease by three incisions, forming three sides of a square one inch and a quarter along each side, the fourth side being represented by the irregular margin and warty masses of the diseased structure at or about the angle of the mouth. The margins were brought together by several pins, and by interrupted sutures in the intervals. All healed well and rapidly, and the man returned to his work. In October, 1864, he returned to hospital, as epithelioma had appeared along the margin of the lip. I found the new growth scattered along the surface of the margin of the lip, not extending deeply and not in a continuous line, but here and there in fissures or cracks along the surface. There was a perceptible space of sound skin between the old cicatrix and the nearest part of the new growth; and the old cicatrix was thin and healthy, and there was no appearance of infiltration in its neighbourhood. I looked upon the disease in the lip as a new outbreak and not as a relapse, and I counselled its removal. I

PLATE 4.

Fig. 2

Fig



accordingly shaved off the margin of the lip in the usual manner and so relieved him from the pressing danger of extensive ulceration of the lip and infiltration of morbid matter into the chin and submental glands. The parts healed kindly, and all has gone on well since.

6. *Fibroplastic Ulcer of the Angle of Mouth and Cheek; Removal of Diseased Mass.*—James Igoe, aged thirty-five, from the neighbourhood of Kilcock, came to me in May, 1863, for advice relative to a very peculiar form of ulcer at the angle of the mouth. It had not the ordinary warty appearance of epithelioma, nor was it a syphilitic ulceration. The margins were ragged and overhanging, but not capable of sub-division into papillæ, as the epithelial growths are. The floor of the ulcer was even; the secretion not very copious, not peculiarly offensive, and the pain was excessive.

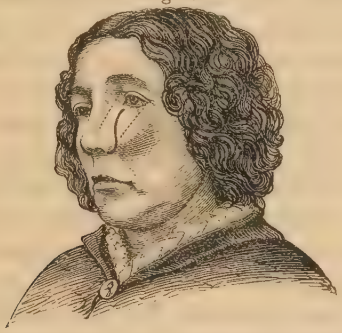
The disease had originated in a fissure at the angle of the mouth, which had extended more especially on the mucous surface of the lips and cheek. The skin was affected, but not as extensively. The ulcer was not epithelial, nor was it syphilitic, nor did it resemble any form of lupus I had ever seen. I removed it freely with a knife, on the 20th May, 1863, by a four-sided incision. Inspection of the growth under the microscope showed it to be a fibroplastic ulcer. The subsequent progress of the case was satisfactory; the wound healed, and the disease did not reappear. Various caustics had been applied without effect before I had recourse to the knife.

7. *Fibroplastic Growth from the Periosteum of the Nasal Cavity; Removal by a New Operation of Great Simplicity.*—Margaret Biron, aged fifty, was brought to me in January, 1864. She had some obstruction of the nasal passages from childhood, and had consulted the late Mr. Carmichael and other surgeons. They appear to have recognized her disease as something more than ordinary polypus, and advised her to let it alone. Gradually the tumour enlarged, expanding the bones of the nose, especially on the left side, and completely blocking up the cavity of the left nostril; the vomer also was pushed to the opposite side. Of late she suffered from headaches, sometimes also from severe pain about the region of the frontal sinus; her memory became weak, and indeed her whole mental powers were below par. Breathing was impossible through either nostril. Numerous dilatations of the angular and other veins showed themselves about the root of the nose, the eyebrows, and neighbouring parts of the cheeks; all these evidenced a state of

considerable pressure. On inspecting the tumour through the nostril, it showed itself quite close to the aperture of the left nostril; its surface was smooth and polished, of a red colour, somewhat brighter than the ordinary mucous polypus: a probe could be passed up on the inner and under sides with tolerable ease. All round the outer and upper surfaces of the tumour the probe was stopped at distances varying from an inch to a couple of lines. As far as one could feel, this was caused by the attachment of the growth to the walls of the nostril in these situations. I resolved to remove as much of the growth as I could include in a wire snare. It was evident that a disease which had lasted for at least thirty years could not be very malignant, and I considered it possible to obtain by this measure at least temporary relief, as well as an opportunity of ascertaining the minute structure of the growth. Accordingly, on the 6th January, 1864, I removed a portion about the size of a walnut, by the snare; and further, by means of the forceps, compressed those parts of the growth which I could seize; smart hemorrhage resulted from this rough handling, and on its cessation much relief was experienced from the frontal pain and headache; and in a few days a considerable amount of breathing power was restored through the nostrils. The piece removed was hollow, like a shell, covered on its external surface with thin mucous membrane, and lined with a curious mammillated growth; its basis was made up of an expansion of the lower spongy bone. The shell of bone was thin, hard and brittle, and under the microscope presented the ordinary appearance of bone. The mucous membrane covering it was perfectly healthy. The internal growth was of the fibroplastic or myeloid type. I have frequently seen this form of growth in connexion with tumour of the jaws; this is remarked by Mr. Paget. The patient got so much relief by this partial operation that she went home; and it was not until January, 1865, that I again saw her. The tumour had grown again so as to fill the entire nasal cavity as before, and the pressure upwards was greater. Her mental condition was lower than before, and appeared to those about her almost hopeless. On the 25th January I proceeded to operate after a new method, by which I hoped to remove all the diseased structure without destroying any of the bone that was healthy. Such a tumour would generally seem to call for complete removal of the superior maxillary bone; whereas by the method about to be described the disease was easily removed without serious injury to the sound

bone. An incision was made along the side of the nose where it joins the cheek; the incision reached from a point just below the inner canthus to the nostril. On the one side the cartilage of the nose was severed from its attachment to the superior maxilla, and the skin of the nose was dissected up along with the cartilage, so as to leave the nasal process of the maxillary bone and the greater part of the nasal bone exposed almost to the mesial line of the nose. On the outer side a flap of skin was lifted so as to lay bare the bone as far out as a line drawn from the centre of the lower margin of the orbit to the most external part of the nasal aperture. By means of a strong bone scissors the bones were cut in the lines referred to, namely, from a little external to the raphe or junction of the nasal bones below, across the nasal bone and the nasal process of the superior maxilla to the union of the latter with the frontal bone; and, secondly, in a line from the outer margin of

Fig. 2.



the bony nostril to the centre of the orbit. Fig. 2 represents alike the deformity which this patient suffered under, and the lines of incision above referred to. The black line beside the nose is the line of incision of the soft parts; the two dotted lines represent the extent to which the cutaneous flaps were reflected and the lines of incision through the bones. The flap of bone loosened by these incisions was irregularly four-sided, about an inch wide below and one and a quarter above. It was simply turned up, lifted on its hinge, like the lid of a snuff-box, and held so, without impairing its attachments above at the margin of the orbit. This manœuvre enabled us to see the left nasal cavity and its contents. The tumour seemed to have extensive attachments to the walls of the nose; the periosteum of the superior maxillary and spongy bones and of the vomer were continuous with its covering. These were freely divided with the knife, and then, partly by cutting and partly

by tearing, the morbid growth was removed piecemeal. It was very friable in texture, unless where it had a basis of bone, so that we were not able to form any idea of its shape from its fragmentary remains. Having cleaned out the cavity, and stuffed it lightly with pledgets of lint with strings attached to them, I closed the wound by restoring the bony lid to its place, and by bringing the flaps of skin across it, and uniting them with numerous points of suture. Considerable consecutive hemorrhage arose in the course of the day, which was checked by the local use of perchloride of iron in solution. She subsequently had a very severe attack of erysipelas, but recovered, and I saw her in excellent health and restored mental power in September, 1866, having had no return of the disease so far.

The operation is an eminently satisfactory one; it is simple and effective, and leaves little mark; this poor woman is scarcely marked—the line of cicatrix is no more than barely perceptible (Plate IV., Fig. 2). Above all, the operation is eminently and truly conservative, as it prevents the necessity for extensive removal of sound bone. The flap of bone united firmly and without deformity; this was mainly owing to my having left plenty of soft tissues in connexion with it when raising the skin from its surface. Another reason for keeping the knife closer to the skin than to the bone was the desire to leave unimpaired such branches of nerve as lie near the bone in this situation.

8. *Exostosis of Vomer; Removal by the New Operation; Immediate Relief from the Sufferings of Years.*—Jane Owens, aged fifty-three years, residing in No. 10, Fitzwilliam-lane. This woman got a blow on her nose eight or nine years ago. Four years afterwards she noticed a white track on the right side of the nose, just at the junction of the cartilage and nasal bone. Three years ago a piece of dead bone came out of her mouth, and other bits she picked out of her nostrils. Besides this, she got a kick of a cow on the left malar bone, which caused extensive abscess, loss of bone, and lachrymal fistula on the left side. These latter mischiefs, however, have nothing to say to the state of disease which we have now to relate.

She came to me about the 1st of July, 1866. Her nose was greatly increased in width, and probably also in height of bridge; the cartilaginous parts of the nose were not altered in form (Fig. 3). On inspection of the nostrils a white shining tumour appeared almost

Fig. 3.

at the orifice of the right nostril. A similar appearance was seen in the left, but not prominent. There was a copious purulent discharge from both nostrils, and also down the throat from the posterior nares; this pus was most offensive to her as well as to those about her. She is a person of most cleanly habits, and did her best to keep down the fetor, but she said it constantly made her sick. The sense of smell was not diminished. Touching the tumour with a probe it felt hard, and rang like a stone. The probe could not be passed along the inner side at all upon the right side, and only a short way along the outer, catching against projections of the growth; on the left the probe passed rather more freely; touching it in this way gave no pain; it was not movable. Of its nature and connexions I could form but an imperfect idea. It was connected with the septum on the right side, and probably also on the left. It was some form of exostosis, but from which bone it had originally sprung was not clear. On looking into the mouth no change in the bony vault could be made out. The chief alteration in the bones was at the root of the nose, where the space between the eyes was much increased, and downwards along the bony prominence made by the nasal bones. All things considered, I felt disposed to look upon it as some irregular form of necrosis or exostosis of the vomer.

As the amount of hypertrophy was greater on the right side, I determined to attack the growth on that side, and to be guided by circumstances as to the extension of the operation on the left. On the 4th July I performed the operation described in the preceding case—namely, the incision of the soft parts from nearly

the angle of the eye to the nostril, cutting off the cartilage from its attachment to the superior maxilla, and turning it up along with the skin on both sides of the cut off the right nasal bone, and the nasal process of the right maxillary bone, and off the side wall of the nose (facial surface of maxillary bone) outwards as far as a line drawn through the centre of the orbit. The bones were then cut with the bone forceps so as to leave a flap of bone nearly square, free on its inferior side, loosened by the forceps on its inner and outer sides and still attached above. This flap of bone was turned up and held out of my way by one of my colleagues. I then seized the bony growth with Fergusson's lion forceps, and partly by force and partly by manipulation I got it out entire. There was a copious flow of pus, with shreds of lymph and dead periosteum in abundance, and but little bleeding. The size and shape of the tumour and the outline of the cavity from which it was extracted showed at a glance that the masses in each nostril were parts of one growth, and that we had got it all out. This was no small relief to all parties; for although the patient was partially chloroformed, she had begun to be unruly, and it was not easy to keep up the chloroform, as she was in a semi-erect posture. I plugged the cavity with lint, soaked in the muriated tincture of iron, and bringing down the flap of bone I stitched across it the two flaps of skin with horsehair sutures. All went on well. The lint was removed the next day. Injections of a five-grain solution of chloride of zinc kept the cavity clean. The sutures held nicely, and were removed from day to day, the last so late as the 16th July, a fortnight after the operation. She left hospital that day, exposed herself to cold, and got a large abscess in the tonsil, but without injury to the parts operated on. She had a slight ectropium of the lower lid, which necessitated a trifling operation for its removal.

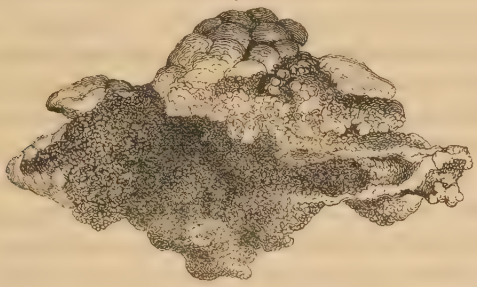
Her appearance is as yet but slightly altered. There is some diminution in the width of the upper part of the nose, and no doubt in time the bones will return to somewhat of their proper form.

Fig. 4 represents (with Mr. Oldham's usual accuracy) the appearance of the growth in profile; the projecting spur, shown to the right of the figure, is the only part in which the natural structure of the bone appeared unaltered; by this point it was attached above. To the left and lower part of the figure are seen two masses which projected, respectively, into the right and left nostrils; the cartilage of the septum fitted into the space between these projections.

Fig. 4.

Fig. 5 represents the tumour as seen from below. The tumour was composed of shell-like masses of bone, very hard, and by no means brittle. Exostosis of the vomer must be a rare disease—I cannot remember ever to have read of a case at all resembling this.

Fig. 5.



9. *Necrosis of a Large Portion of Superior Maxillary Bone, Removal by Incisions in the Mouth.*—This case—one of many similar—exemplifies the mischief from exposure to cold after the loss of a tooth, with more than usual severity. The operation for removal of the bone was trivial, and is one that most surgeons have had to perform many times.

John Cunningham, about twenty years of age, living in the county Wicklow, had a large upper molar, which became carious. In extracting it much violence was done to the jaw with the key, and one of the fangs of the tooth was left behind. He walked some miles that day in wet and cold, and as a natural result he got inflammation of the jaw. Abscess followed; and on its breaking a large piece of bone was found to be loosened; three teeth fell out,

or were pulled out by himself as they became loose; and finally, after several weeks, he came to me suffering from constant irritation and discharge of matter. The removal of the dead bone was easily effected by a single incision in the mouth. It was a large piece of bone, and had carried four teeth; in shape it differed from those I had previously seen perish in a similar way, as it ran up to a point in the centre of the outer plate opposite the fang which had been left in. Generally the necrosis, when incomplete, is limited to the alveolar processes, and the piece which perishes is of an oblong outline. This was the only peculiarity of the case, and the only reason why I include it in this series.

10. *Epithelial Disease of the Tongue near the Root; Removal of the Disease; Respite for Two Years.*—Patrick Gallagher, aged fifty, by trade a baker. Three months before his application for admission into hospital he observed a sore spot on the left side of his tongue, far back. I found he had a gap in his teeth where he carried his pipe, and that the end of the pipe used to be steadied against the tongue at or near the point where the sore began. This sore ran the usual course, not extending much in superficial extent, but steadily becoming deeper, and as it deepened producing hardness of the tongue from epithelial deposit all round its margins and involutions. The usual round of caustics had been tried with the usual baneful effect. The disease had been aggravated, and in three months had come to implicate about a fourth of the tongue. It extended forwards rather more than half way, leaving about the anterior third of the organ quite free; it came quite to the mesial line, but not beyond it; below, it could just be isolated from the lower jaw and its periosteum, and, posteriorly, it went as close as possible to the soft palate and to the folds which connect the epiglottis with the upper surface of the tongue. It was manifest that in a very short time the epiglottis and larynx must be attacked, when death would inevitably ensue from œdema glottidis. I therefore determined to remove the disease if possible. On the 28th January, 1863, having partially chloroformed him, I made an incision through the cheek from a point a little below the angle of the mouth back to a point opposite the last molar tooth in the lower jaw. I did not commence the incision from the exact angle of the mouth, because such a cut always leaves an ugly pucker by interfering with the orbicular tendon and the insertion of the muscles at the angle of the mouth, while a cut made

above or below this point produces much less deformity. This opening in the cheek gave room to get a strong Liston's needle through the base of the tongue behind and under the disease. The double ligature with which this needle was armed enabled me to pull through the opening the chains of two ecraseurs by which the diseased mass was isolated before and behind, and slowly separated; the division of the inferior attachments was effected partially by the knife before the ecraseurs were tightened. The chains were kept from slipping by hooks and strong needles plunged into the diseased part until they had begun to cut it. Fully ten minutes was taken in working the ecraseurs home, when the piece came out easily, and with scarcely any hemorrhage. Some solid perchloride of iron was passed over the raw surface of the tongue, and the wound in the cheek was closed with pins and sutures. All healed quickly. The tongue swelled very little, and the cicatrix, which subsequently resulted, was firm and healthy. The tip of the tongue pointed rather towards the left, but the articulation was perfect, and the relief from pain and salivation was complete. The disease did not begin to reappear for a twelvemonth, when it slowly showed itself in the gland under the ramus of the jaw; and upon inspection, in a slight degree far back near the under surface of the base of the tongue, in the cicatrix. I saw the patient alive in January, 1865, two years after the operation. He was then not likely to live many months, as the disease had extensively spread through the cervical glands; the pain was severe, and in all probability killed him soon after. There was no external ulceration.

11. *Epithelial Disease of the Tongue; Similarly treated.*—Darby Sullivan, aged sixty, from Listowell, in the county Kerry. This man had an epithelial ulcer on his tongue which implicated the greater part of the left half of the organ from near the root to the tip. It was by no means so favourable a case as the last, but he wished to have the chance of operation, and I accordingly performed a perfectly similar one to that which Gallagher underwent. The same incision was made in the cheek, and two ecraseurs were employed. Considerably more of the tongue was removed, but with all the care I could use I was not satisfied that all the diseased parts on the floor of the mouth were removed. All healed up well for the time, but in August, 1863, four months after the operation, I heard that the disease had returned in the neck, and

with severe suffering. He got rapidly worse, and died within the year 1863.

Comparison of these two cases proves, as far as they go, that the more completely the disease is removed the longer is the respite. I have in these pages and elsewhere so often given forth my views on the local nature of epithelioma that it is unnecessary to repeat them at any length. This disease is essentially different from cancer, in its origin being superficial and not interstitial, in its rate of progress being slower, in its longer limitation to the place of origin, and in its far greater curability. It is not cancer of the skin—which is a well-known and easily-recognized variety of tubercular scirrhus; nor has it a right to be called cancer any more than the fibroplastic, recurrent fibroid, or other lymph growths, which are more analogous to cancer in their mode of origin, and which are yet distinguishable from cancer, and distinguished from it by all scientific surgeons of the day. That epithelioma of the tongue is more virulent and rapid in its progress than the same disease on the lip is intelligible from the higher vascularity and moisture of the tongue: but we may surely accept this fact without asserting, as a most illogical consequence, that because it is here exceptionally rapid and destructive, it is therefore cancer. Yet to what else do the arguments in favour of its being cancer come.

12. *Epithelioma of the Right Side of the Tongue; Removal by Section of the Jaw and Knife; Death from Pyemia.*—John Young, aged sixty-five, had been suffering from epithelial disease of the tongue for about five months. The right half of the tongue was diseased from tip to base, and the floor of the mouth very much ulcerated also; the disease came quite up to the mesial line in the middle of the tongue, and nearly so at the tip. I found it would be impossible to take all away without section of the lower jaw, so on the 21st June, 1865, having chloroformed the man, I divided the lower jaw at the symphysis, by saw and bone forceps, having previously split the soft parts from the lip to the os hyoides in the mesial line. Having seized the tongue, and drawn it forwards, with a strong hook, I split it rapidly down the centre to the base, going as near the epiglottis as possible. Hitting the exact raphe the operation was very easy, the least touch of the knife splitting it fairly down the centre. Before detaching the diseased part I had a very strong ligature passed as far back as possible behind the diseased parts, and tied with the utmost tightness. I then carefully

cut across the base, and removed the mass without arterial hemorrhage. On the stump I picked out and tied a couple of arteries, which was a fortunate precaution, as the strangulating ligature loosened and slipped off very shortly. The parts were brought together, the teeth tied together with wire; sutures were put into the lip and chin, and an aperture was left below the chin through which the ligatures were brought, to serve as a drain for saliva, blood, or pus. The man had a rigor, but rallied under stimulants. However, a bad style of discharge always came from the wound, which looked grey and sloughy. In spite of antiseptic lotions, good diet, stimulants, and quinine, this continued; he became yellow and pinched, and finally died with symptoms of what is termed pyemia, on the 5th July, a fortnight after the operation.

There is no doubt the mouth is a locality most favourable to the direct absorption of foul secretions; to this I think we must attribute the great fatality of operations such as this.

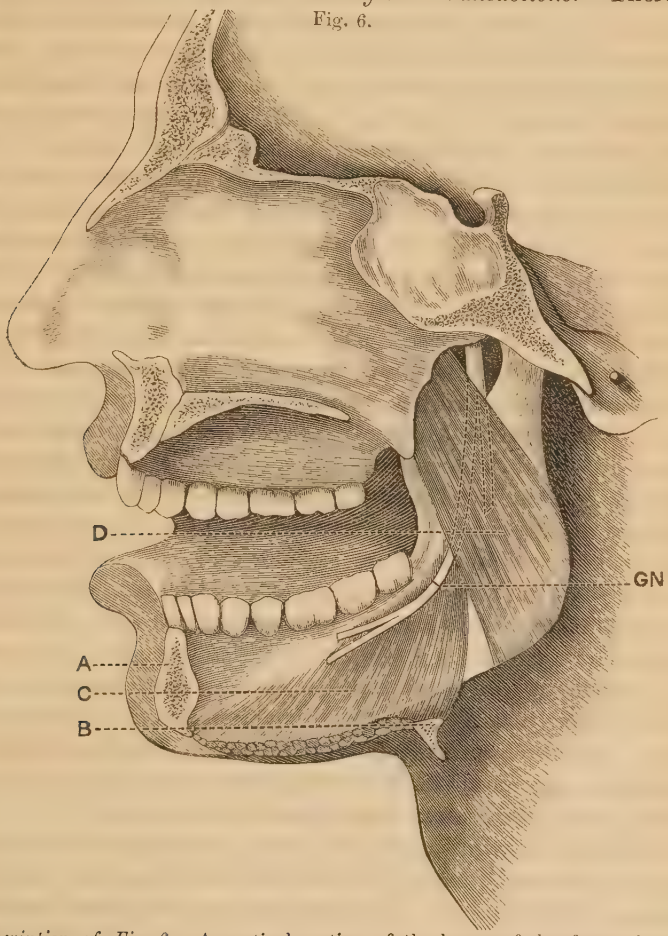
13. *Epithelioma of the Tongue; Division of the Gustatory Nerve, with Unusual Benefit; Repetition of the Operation on the other Side, with Relief.*—Michael Kennedy, aged about fifty, had been for fourteen months the subject of a severe ulceration of the left side of the tongue. This was originally produced by the irritation of a ragged tooth—the first molar in the lower jaw. The ulcer extended from the apex of the tongue back to a line beyond the last molar tooth; it was also broad, occupying not only the side, but the under surface, and much of the dorsum of the organ. The teeth indented it deeply, especially the first molar. The sub-maxillary and lymphatic glands about the angle of the jaw were much enlarged; the ulceration extended slightly to the right of the mesial line, and deep infiltration had occurred in the body of the tongue, giving it a nodulated appearance and a hard feel, such as might have made it difficult at first to say whether the disease was scirrhus or epithelioma; but the early history clearly pointed to the latter affection. The pain was constant and intense, precluding proper sleep, and incapacitating the poor man for any work. This pain had been an early symptom, dating in fact from the very commencement of the ulceration, and arriving at a distressing intensity at the beginning of 1863. The man had been the round of the principal London Hospitals, and had suffered much from caustics of various kinds. Narcotics of all sorts had been used ineffectually, or with transient benefit. Strange to say no one had suggested the

division of the gustatory nerve as a palliative, although it was quite the case for it, the disease being still limited to the region supplied by this nerve. I proposed it to him, and he acceded at once. Indeed his sufferings were so acute that he would have borne anything for relief. There was little difficulty in the operation, which I performed on December 8, 1863, in the following manner:—placing him in a chair opposite a good light, I passed my left index finger into the mouth, until it rested on the last molar tooth. Then, introducing the point of a strong curved bistoury beyond my finger, I made an incision of less than an inch in length along a line running obliquely in the direction of the angle of the jaw. This incision lay about half an inch beyond the last molar tooth, and three-quarters of an inch below its level. The parts were divided down to the bone. By such a wound, the gustatory nerve and, perhaps, a few fibres of the mylo-hyoid muscle are divided, as they lie beneath the mucous membrane. The pain of the incision was considerable, but momentary. That night he slept well, for the first time for eleven months enjoying rest unbroken by pain. The ulcer next day was insensible when touched, and quite devoid of pain, and it so continued for six weeks. This was only the natural effect of division of the nerve; but in a few days an unexpected benefit arose to the parts from the absence of pain; the surface of the ulcer lost its vivid angry hue, while the edges became of a bright healthy red, and were evidently closing in. In the course of a week the ulcer was considerably reduced in size, and in three weeks the upper surface and side had healed, leaving only a small warty patch on the under surface raw, but not tender. I removed the obnoxious tooth about the end of the second week, as soon as it became evident that if left there it would press on the side of the tongue. That so large a portion of the ulcer should have healed in this singular manner affords a strong proof of the assistance which freedom from pain confers upon all actions of repair.

At the end of three weeks he began to feel pain on the right side of the tongue, and I divided the nerve on that side also, with great benefit to him. The operation, although only palliative, was of great benefit to the poor man, so long as the disease was limited to the anterior part of the tongue. From the amount of glandular infiltration it was plainly impossible to remove the disease by any surgical operation, and under those circumstances it was a great point to be able to afford even temporary relief in this simple manner.

The operation of dividing the gustatory nerve was first performed by Hilton, whose case is given in the seventh volume of the second series of *Guy's Hospital Reports.* From his paper I have taken the liberty of copying the accompanying woodcut, which explains the steps of the operation.[a] Mr. C. H. Moore has also drawn attention to it in the *Medico-Chirurgical Transactions.* There are

Fig. 6.



[a] *Description of Fig.* 6.—A vertical section of the bones of the face; the inner surface of the lower jaw is partly hidden by the internal pterygoid and mylo-hyoid muscles; between these the gustatory nerve may be seen descending forwards.

A—Symphysis of the lower jaw.
B—Mesial section of the os-hyoides.
C—Mylo-hyoid muscle, upper surface.
D—Internal pterygoid muscle, inner surface.
G N—Gustatory nerve marked at the spot where it should be divided.

many advantages to be derived from this operation besides the relief of pain; the flow of saliva is diminished materially, and this, as is well known, is a most distressing source of annoyance in malignant disease of the tongue. Again, patients often suffer in health, and become emaciated, not so much from the primary effects of the disease as from the unwillingness or even inability to take proper or sufficient food. The ulcer is not only painful, but sore to such a degree as to render the attempt at swallowing almost impossible, and in the case of solid food quite so. The division of the gustatory gets rid of this soreness; and the improvement in the patient's appearance after the operation is due in a great measure to his increased capacity for taking food. Again, if the tumour is to be removed, the previous division of the nerve is a positive advantage, inasmuch as the use either of knife, ecraseur, or ligature will then be almost painless. I have not, however, found the ecraseur so painful as to make it necessary to divide the nerve. Besides I find that chloroform is given just as safely in operations on the mouth as in other cases, and that it positively makes them easier of performance, the supposed difficulty from accumulation of blood and mucus not occurring. I now use it even in operations on the cleft palate, and find it facilitates the operation most materially. Still the advantages of dividing the gustatory in cases of malignant disease of the fore-part of the tongue are very manifest; and I think so simple a palliative ought to be more frequently adopted.

I have performed the operation five or six times; it is sometimes a little difficult to hit the nerve, in cases where the tongue is much swollen, but by a little management I have always succeeded. The relief afforded by it lasts to the full for five or six weeks, and in a slighter and gradually decreasing degree for two or three weeks more. By that time the divided nerve becomes again capable of transmitting the nervous current. The operation may then be repeated, if the disease has not by that time extended too far back, as will be most likely. I have been asked why I did not cut out a piece of the nerve. In the first place that would make the operation tedious, painful, and probably very difficult; the nerve should be exposed, and seized with forceps before a piece could be excised, while simple division of it in the way described above can be done without seeing it. Secondly, the interval taken by the nerve to unite and become perfect as a channel of sensation is about equal to the time which it takes the disease to spread to parts supplied by the glosso-pharyngeal nerve. Still, if a case occurred to me where

the disease was slight but painful, and where the patient refused to allow the removal of the disease, I should advise the excision of half an inch or so of the nerve.

Art. IX.—*Ophthalmoscopic Notes.—On the Theory and Principles of the Ophthalmoscope.* By Henry Wilson, F.R.C.S.I.; L.K. and Q.C.P.I.; Assistant Surgeon to St. Mark's Ophthalmic Hospital; Member of the Royal Irish Academy, &c.

In proportion as our knowledge of the laws of nature increases and as science advances, do the art and means of discovering the seat and nature of disease become more and more developed. The application of the exact sciences in the domain of medicine has resulted in the discovery, or the utilization, of chemical tests and mechanical contrivances whereby the practitioner is enabled to pronounce definitely on disordered conditions, the existence or nature of which he could only have guessed at, without the employment of those means. Morbid changes in the tissues and fluids, such as amyloid degeneration (which has been elucidated by Dr. Robert M'Donnell's able researches), *leucæmia*, &c., with which we were previously unacquainted, have been revealed by the microscope, by chemistry, &c.; diseased conditions of the vocal and respiratory apparatus hitherto unknown, except, perhaps, as *post mortem* appearances, have been not only recognized during life by means of the laryngoscope, but also successfully treated; quite recently the endoscope has been so perfected by my friend Dr. Cruise, as to bring into view the interior of the urethra, bladder, &c.; and the ophthalmoscope has opened quite a new field of investigation. Immediate exploration by instrumental aid, wherever practicable, is gradually superseding, in a great measure, all other methods of investigation, and the practitioner is becoming less and less dependent upon the statements of patients or their friends, which, owing to various causes, are in many instances so very unreliable; thus the art of diagnosis is becoming facilitated and perfected, and in direct ratio to the accuracy of diagnosis will the practice of medicine be less and less empirical.

Since Lænnec's great discovery of auscultation and the stethoscope, no instrument has rendered such vast services as the ophthalmoscope, not merely in the interpretation of purely ocular affections, but also

in the elucidation of disease in other organs. It renders visible in the living eye the various phenomena of healthy and diseased circulation, and many disordered conditions which illustrate and explain physiological and pathological processes elsewhere; by means of it morbid actions and structural changes may be watched from day to day, or hour to hour, and its employment not unfrequently leads to the detection of disease in other organs, such as the brain, kidneys, circulating apparatus, &c.

With the discovery of the ophthalmoscope a new era dawned in ophthalmic literature—discoveries followed each other in rapid succession—optical defects, the nature of which had been hitherto unknown, or misunderstood, have been explained and remedied, and the laws and mechanism of refraction and of accommodation have been but lately satisfactorily explained. In no branch of the profession, indeed, has there been such great progress of late years, as in ophthalmology, and, thanks to the indefatigable and zealous labours of earnest and scientific men, ophthalmic medicine is becoming more closely allied to the exact sciences; it is worthy of note, indeed, that some of the most distinguished oculists of the present day are eminent also as mathematicians.

The importance of the ophthalmoscope as a means of diagnosis can scarcely be overrated. I need only adduce in proof thereof the former definition of *amaurosis*, "that condition in which the patient sees nothing, and the physician likewise nothing;" this definition is now quite untenable, for the instrument renders either positive evidence, and the physician is able to see the cause of the blindness (which is the case in the large majority of amaurotic persons), or else it affords negative evidence, that is of the eye itself being healthy, and the physician is in a position to pronounce the cause of blindness (amaurosis) extra-ocular, and he may thereby be led to ascertain the nature and seat of the lesion or disturbance (generally intra-cranial) which has given origin to the blindness.

The term amaurosis is becoming less and less frequent, and will, I hope, eventually come to be used only in its true significance, and simply denote a symptom, and not as is but too generally the case at present, a disease.

And if by its means we are enabled to make a correct diagnosis, the ophthalmoscope must, of necessity, be useful also in the treatment of disease; while in one instance we are able to pronounce our patient incurable, and spare him the sufferings, mental as well as physical, of futile treatment—in another we are able to declare him

curable, and subject him to appropriate treatment. No doubt long experience and accurate observation, will, in a great number of cases, enable the practitioner to arrive, empirically, at the same conclusions, without the aid of the instrument, but how much more satisfactory to ourselves, and beneficial to the public, when even the youngest practitioner can at once give a prognosis as reliable, if not more so, than that which it has taken a lifetime, perhaps, to be enabled to pronounce.

The ophthalmoscope is especially important and useful in cases of suspected deception in the selection of recruits, for the various public services, or in the examination of those already in such services. Thus, defects can be detected in the eyes of recruits which would unfit them for various duties, and soldiers and others who are really labouring under disease of the internal structures of the globe, the eye presenting, externally, no sign whatever of disease, are now free from the odium which may have formerly attached to them as schemers, while real malingerers are liable to detection and punishment. The Army Medical Department has taken up the subject of the ophthalmoscope very warmly, and there is a special course of study thereon, at Netley, under the able guidance of its distinguished Professor of Military Surgery, Deputy Inspector-General Longmore. This increased attention to the vision of recruits, soldiers, &c., must result in a considerable pecuniary saving to the country at large. The following extract from Dr. Longmore's *Ophthalmic Manual*, published for the guidance of army surgeons, is, I think, equally applicable to civil as to military practice:—

"A soldier who is really the subject of serious disease may, by chance, be regarded as a malingerer, because all the superficial ocular apparatus are free from disease, and all that can be seen by ordinary observation of the deeper structures of the eye are observed to act precisely as they do in eyes that are known to be healthy. We have, unfortunately, conclusive proofs that such errors as these formerly occurred very frequently; and that they led to soldiers being sent on foreign service, often to tropical climates, where their diseases became rapidly aggravated, so that they had shortly to be invalided home again, as well as to the retention for considerable periods at home stations of others who were useless, and who had at last to be discharged from the service, after much expense being incurred by their prolonged maintenance. If a defect of vision really exists the medical officer should be able to report to his professional superiors, the exact cause of the disability, for on this

also may hinge many points of importance to the public service, to the soldier, and to the State. If the defective vision be the result of some natural abnormality of the refractive media, or special form of the globe, the service has suffered from the admission into its ranks of an ineligible recruit. If the defect be the result of disease, such as too often follows service under the glare of a tropical sun, then the soldier has suffered from his employment by the State, and is entitled to compensation according to the degree of his disability. There is only one way in which a diagnosis, in these cases, can be truly arrived at, and that is by means of the ophthalmoscope."[a] These, and other considerations, point to the very great practical utility of the instrument, the cost of which is trifling, and the manipulation not difficult; I would, therefore, claim for it a larger share of the attention of the Irish profession than has been, I think, hitherto accorded to it.[b]

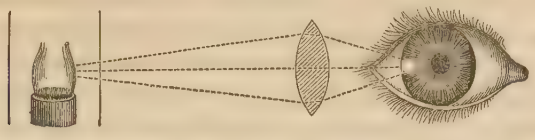
Before, however, entering upon the subject of the ophthalmoscope, I would direct attention to other methods of illumining and examining the eye. In the ophthalmoscopic examination we illumine the bottom of the eye, as shall be presently explained, by light *transmitted* through the transparent media; hence, any opacities in the latter will intercept some of the light, and appear simply opaque, as happens also in microscopic examinations; to determine the colour and character of these opacities, therefore, *incident* light must be employed, and this is effected by means of *focal* or *oblique illumination*. Focal or lateral illumination consists in concentrating, on any given spot of the eye, by means of a convex lens, the light from a lamp placed at the patient's side. I am in the habit of using for this purpose a two-inch convex lens. The apartment should be darkened, and a lamp placed about one foot and a half from the patient's side and towards the front, so that the flame and eye shall be nearly on a level, and the globe to be examined illumined, while the opposite eye remains in darkness; the convex lens is then held

[a] One of the most able and exhaustive reports on ophthalmic surgery which has appeared of late years is that contained in the Army Medical Reports for 1860, written by Assistant-surgeon Dr. Frank, the merits of whose writings and teachings are universally acknowledged. Dr. Frank has withdrawn from the army, and it is much to be regretted that the State has thereby lost the services of so accomplished and efficient a medical officer. The greater part of his report is devoted to the examination of the deep-seated diseases of the eye, which can be recognized and studied only by means of the ophthalmoscope.

[b] The various forms of ophthalmoscopes, as well as lenses and other optical appliances, can be had at Mr. Yeates', 2, Grafton-street.

between the thumb and index finger, two inches from the eye, as indicated in the woodcut, in such a manner that the rays from the

Fig. 1.



flame shall pass through it and be brought to a focus on the cornea. If it be desired to examine the iris, capsule, or lens, the convex lens must be held nearer to the eye so as to focus the rays on these parts. This mode of examination can also be practised by intercepting and concentrating on the eye, by the same lens, direct beams of sunlight; but the eye is, as a rule, not very tolerant of such illumination, and sunbeams are not always at command; ordinary diffused daylight does not suffice for the purpose. Another method of effecting *oblique illumination* consists in reflecting on or into the eye, by means of a mirror, the rays from a lamp, while the observer places his eye nearly in the line of these rays. This is best accomplished by holding a small circular plane mirror, or, better still, the ordinary ophthalmoscope mirror itself, just over or in front of the eyebrow, so that the rays from a lamp, placed at the side or above and behind the head of the patient shall be reflected into the observed eye. The distance between observer and patient is then diminished or increased, and slight rotatory movements of the mirror on its own axis executed until a satisfactory illumination is obtained of the part to be examined. Although it is only of recent years that these methods have received that attention which they undoubtedly deserve, similar modes of examination have long been known, and occasionally employed. Mackenzie mentions, at p. 508 of his *Practical Treatise on the Diseases of the Eye*, published in 1840, the circumstance of his having seen what he considered the effects of hyaloiditis, "in directing the light of a gas jet through the pupil with a lens;" and at p. 639 he speaks of concentrating the light on a cataractous opacity by means of a double convex lens. Himly in his *Krankheiten und Missbildungen des menschlichen Auges*, 1843, likewise recommends the ordinary daylight to be concentrated on the eye by means of a convex lens; he also advises illumination by means of reflected light from a mirror, but says it should be used only with completely blind eyes. He noticed a greyish or greenish appearance of the pupil when the interior of the eye was illumined,

and states that the blackness of the interior always ceases when strong illumination is used. It is worthy of note how very near to the discovery of the ophthalmoscope this author had arrived. By focal or oblique illumination each portion of the *cornea* may be brought successively into view. Opacities and irregularities in or on that membrane are exhibited with surprising distinctness; the effusions in *iritis*, covered with red vessels; the sequences of inflammation, such as adhesions, patches of pigment on the capsule of the lens, &c., are brought very clearly into view; their colour, extent, and consistency, are incomparably better ascertained by focal than by any other mode of illumination, and we are thus enabled to estimate the length of time which may have elapsed since the occurrence of the active inflammation. Partial or total loss of vision may occasionally form the subject of a medico-legal inquiry, and any iritic complication which might exist would afford valuable information. But it is principally in examinations of the *crystalline lens* and its capsule that I would advocate these methods; for the determination of the condition of these parts I rely altogether on focal illumination. The anterior capsule affords, as a rule, in health, a very faint reflection, but in young persons there should be no reflection from the interior of the lens, which should hence be invisible. The lens itself is composed of such various elements—tubes, fibres, &c., &c.—and is of such complicated arrangement, that it can be perfectly transparent only when all its component parts exhibit exactly the same refractive index. About the middle period of life (thirty), the individual parts begin to undergo an alteration in their refractive condition, and reflect a certain portion of the incident light, and consequently become visible This fact should be always remembered, lest the natural reflection peculiar to advanced age be mistaken for cataract. If, when this reflection is strongly marked, the lens is examined by transmitted light, by means of the ophthalmoscope mirror, it will often be found perfectly transparent.

The seat, extent, and consistence of lenticular opacities may be accurately determined; and this is, in practice, an object of the greatest moment, for a knowledge of these circumstances will, as a rule, enable us to decide whether the opacity is a stationary or progressive one, or what length of time may elapse before the lens becomes completely opaque, and will also guide us in the selection of an operation. Opaque capsules, exudation membranes, &c., resulting from cataract operations, are best seen by focal illumination; I have been thus enabled, in some instances, to observe accurately

false membranes which I was not able to perceive otherwise, although I possess very acute vision. These cobweb-like glistening membranes are of a greyish colour, with whitish bands or specks scattered through them, or they appear as a cellular network of fine tendinous bands in one or two layers, stretching across the pupillary area, about midway, sometimes between the iris and vitreous, or simply in the pupillary opening of the iris. The impairment of vision caused by these membranes is often very great, and the improvement resulting from their removal is truly astonishing. Partially or completely luxated transparent lenses are also easily recognized by this illumination; the periphery or equator appears, as also in daylight illumination, as a brilliant amber or golden-coloured semicircle, varying in its position as the eye or light vary in their relative positions. This appearance is said to have been observed in the normally placed lens, in albinos, through the iris, which is scarcely at all pigmented; the periphery of the lens can be seen also where the iris is partially or wholly absent. Focal illumination allows us even to examine the anterior part of the *vitreous humour*, and affords the best means of seeing tumours protruding into the chamber of vitreous humour.

The luminous appearance presented by the eyes of certain animals, such as the dog, cat, &c., occupied the attention of philosophers from a very early period. At the commencement of the last century Méry made some investigations on the subject, and while examining a living cat's eye, under water, saw the retinal vessels. This was subsequently confirmed by Lattère, who accounted for it by supposing that the eye under water adapted itself to the new medium, and that the rays, leaving the eye, were divergent, and therefore brought to a focus on the observer's retina, a theory we now know to be fallacious. Based, however, on the fact of the interior of the eye being visible under water, is Czermak's *orthoscope*, which is a box-like apparatus with glass sides, open at one side so as to fit over the eye, and at the top for the reception of water; when fitted on to the integuments, over the orbital margin, it forms a water-tight chamber, projecting into which is the eyeball. The water in front of the cornea acts as a lens, and the natural focus of the eye is displaced forwards, and hence the retinal vessels become visible.

At the beginning of this century Prévost established the fact that the luminosity of animals eyes was not perceptible in a *perfectly* dark apartment, but that some light must be present; he concluded, therefore, that the luminosity was attributable to a *reflection* from

the bottom of the eye, of light which had penetrated from without. He also found that this luminosity could be seen only in certain positions, and not in others. In the dog and cat, and indeed in the majority of the carnivora, in the ruminantia, in the horse, in the cetacea, and in the cartilaginous fish, there exists at the outside of the optic nerve entrance a patch of peculiarly constituted choroid, which is devoid of pigment, and of a beautiful metallic lustre. This is the *tapetum lucidum;* it varies in colour—blue and green being the predominant ones—and has a smooth polished surface, which acts as a concave mirror. The luminosity in these animals is attributable then, not as was anciently supposed, to spontaneous generation of light, &c., but to a reflection of light incident on this tapetum.

The blackness of the human pupil was referred to the complete absorption of light by the choroid membrane which possesses no tapetum. Complete absorption of light is, however, very rare; were the choroid even as dark as chorcoal (one of the substances most capable of absorbing light), a portion of the rays would still be reflected, for in their passage from one medium to another rays of light are never so completely and altogether absorbed but that some of them are reflected. Moreover, certain portions of the healthy retina, such as its vessels, as also the intraocular end of the optic nerve, should reflect a large portion of light. The blackness of the pupil cannot, therefore, be owing to absorption of light. Furthermore, we know from practical experience that although the pupil is, under ordinary circumstances, black, yet, it has occasionally been observed to be luminous; thus, I have seen the human eye as brilliant as any animals eye, on the occasion of a laryngoscopic demonstration, where all the circumstances of Cumming's experiments, to be mentioned presently, were accidentally fulfilled; similar occurrences have been noticed by other observers. The interior of the human eye was long ago noticed to be luminous in albinos, in partial or complete deficiency of the iris, in certain diseased conditions, such as fungus hematodes, various tumours, separation of the retina, &c.; the "cat's-eye amaurosis," first described by Beer, at page 495 of his *Augenkrankheiten*, in which there existed in the bottom of the eye a "concave pale grey or yellowish-white, or reddish opacity," was, I believe, in the majority of instances due to separation of the retina. A consideration of these theories and facts leads to the conclusion that a portion of the light which enters the eye is again reflected from it, but that we are, under ordinary circumstances, unable to perceive it.

One of the first to investigate this subject, and to arrive at some satisfactory conclusions, was Mr. Cumming, formerly house surgeon to the London Hospital; it may be said, indeed, that on his experiments and writings is based the discovery of the ophthalmoscope. In 1846 he published, in the twenty-ninth volume of the *Medico-Chirurgical Transactions*, his essay[a] "on a luminous appearance of the human eye," the object of which was "to show that the healthy human eye is equally, or nearly equally, luminous as the eye of the cat, dog, &c., when observed under favourable circumstances; and the application of the abnormal appearance, or want of this luminosity to the detection of changes in the retina and posterior part of the eye." The circumstances necessary for observing this luminosity are, he remarks:—"*a.* That the eye must be at some distance from the source of light, the distance being greater in proportion to the intensity. *b.* That the rays of light diffused around the patient (and sometimes around the eye itself), should be excluded. *c.* That the observer should occupy a position as near as possible to the direct line, between the source of light and the eye examined; hence, it is sometimes necessary for the observer to stand obliquely, that his eye may approach nearer to the direct line." "Let the person under examination sit or stand eight or ten feet from a gas-light, looking a little to the side; standing nearer the gaslight we have only to approach as near as possible to the direct line, between it and the eye to be viewed, at once to see the reflection." It having thus been established that the human eye is, under certain circumstances, equally luminous as that of animals, the enquiry arises what these circumstances are, and how we may at all times, and most effectually for practical purposes, illumine the interior of the eye.

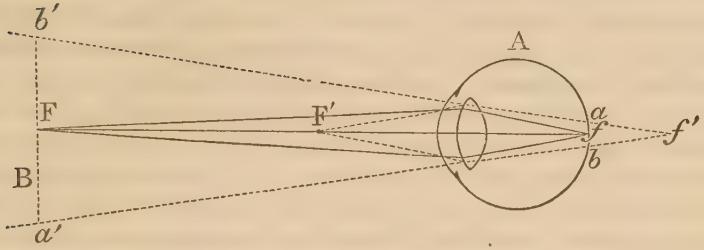
The human eye possesses a dioptric apparatus, and is endowed, in addition to the ordinary refractive powers of its system of lenses, with the vital function of adjustment—altering its focus, and thus accommodating itself for various distances and various sized objects. By means of this *accommodation* we are able to see an object distinctly whether it be one foot or six feet distant. Various have been the explanations of the mechanism whereby this is effected; some imagined it to take place by alteration in the shape of the globe by means of the extrinsic muscles of the eyeball. Kepler, the celebrated mathematician of the 16-17th century, who

[a] See Sir Wm. Wilde's notice thereof in the number of this Journal for February, 1847, p. 257.

first described the humours of the eye as refractive media, and the consequent formation of images on the retina, was also the first to ascribe this accommodation to the ciliary ligament, the contraction of which produced, according to him, elongation of the globe, in which movement the retina was carried to a greater distance from the lens when objects were near. Porterfield, a learned physician and mathematician, whose *Treatise on the Eye—the Manner and Phenomena of Vision*, 1759, is still one of the best works we possess, regarded the ciliary ligament as muscular, and attributed to it the function of changing the position of the lens, of increasing or diminishing the distance between it and the retina, according to the different distances of objects to be seen, so that the retina should be "always at a due focal distance behind the crystalline." According to a still older theory, the ciliary ligament or muscle effected an alteration in the curvature of the lens, and hence in its focus; and this theory has been, in recent times, amply confirmed by the experiments of Helmholtz, Knapp, and others.

A normal eye is so constructed that when at rest parallel rays striking the cornea are brought to a focus on the bacillary layer of the retina (Jacob's membrane). Strictly speaking, there is in nature no such thing as parallel rays, for all rays emanating from a luminous point are divergent and must continue so; the divergence of rays coming from an infinite distance is, however, so very slight, and the surface of our eye, on which they impinge so very small, that practically we may look upon them as parallel. If an eye be accommodated for a luminous object—say a flame—rays from it on entering the eye will undergo a certain definite refraction or change of direction whereby they are brought to a focus on the retina; a portion of these rays will be absorbed by the choroid, while the remainder will be reflected; this reflected portion must, however, return from the bottom of the eye in exactly the same line as it entered; it will therefore again undergo a refraction similar in nature, but opposite in direction, to that it underwent on entering; and emerging from the eye these rays will return to the flame from which they originated, and there form their focus. Let A (Fig. 2) be an eye accommodated for F, a flame; rays from the latter impinge on the cornea slightly divergently, and entering the eye will be rendered convergent by the refractive media and brought to a focus at *f*, at which place there will therefore be an image of F; from this luminous image rays will be reflected outwards in the same line as they entered; they strike the posterior surface of the crystalline

Fig. 2.



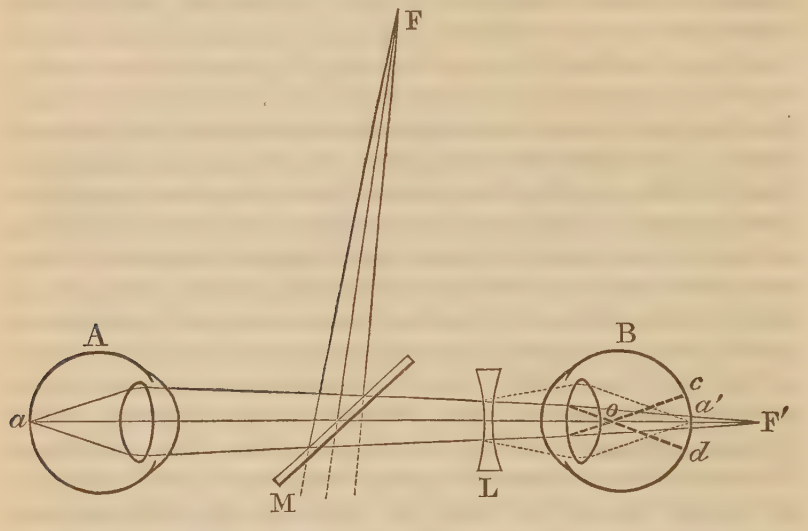
lens divergently, are converged by it, and emerge from the eye convergently, and are united into a focus at F; hence, F, the luminous object and, *f*, its retinal image will act reciprocally as *conjugate foci*, each being alternately object or image—whichever be the radiant point the other will be the focal point. In like manner, when we regard another individual's pupil, it will be merely a representation of our own; and as our own pupil appears black, and sends no light into the observed eye, the pupil of the latter will consequently appear black also. The eye of the albino would appear, at first sight, to offer a contradiction to the above, as the pupil in such cases presents, even in ordinary daylight, a reddish or brilliant appearance, but this luminosity is due to rays entering the eye through the very scantily pigmented iris and choroid, parts which ordinarily possess such an abundant pigmentation as to render them very opaque. This may be proved to be the case by holding a blackened card or screen with a central aperture corresponding to the pupil in such a manner before the eye that all rays except those entering through the pupil shall be excluded; the red reflection will then disappear, and the pupil appear black like that of an ordinarily pigmented eye.

In order then for an observer to perceive the returning rays his eye must be in the line of their emergence, *i.e.*, between F and A, or at F, for at any other place (such as at B) A's pupil will appear black. If we interpose between F and A the illuminating rays would be necessarily cut off; and it is impracticable to place our eye at F. We may, however, bring our eye very close to F, and by looking through the margin of the flame we approach very nearly to the direct line of the emergent rays, and in this position we obtain a bright reflection from behind A's pupil, as in Cumming's experiments.

Professor Helmholtz, now of the University of Heidelberg, constructed an apparatus by means of which the observer could readily

place his eye in the direct line of the emergent rays; and in 1851 he published an account thereof. The chief features in this invention are the employment of *reflected* light, and the utilization of the laws of refraction. Let A, in Fig. 3, represent the observed

Fig. 3.



eye, and F a flame on the same level, five inches to the side, and a little towards the front of the patient; M, a piece of well polished plane glass, with parallel surfaces, placed one inch in front of A, at such angle that rays falling on it from F shall be reflected into the eye, as if they came from F′, which is a point as far behind M as the flame is in front of it. The observed eye will apparently see the flame at F′, for which distance (five inches) he then accommodates. The plate M acts as a speculum, but being transparent some of the rays from F pass through it, and are lost; others, however, are reflected into A, and are brought to a focus on its retina—at *a*—where there will be consequently an image of F. As already explained rays emerge from this image, some of which are reflected back to F by M, while the remainder traverse M to form their focus at F′, the point for which the eye is accommodated, and where there will therefore be an image of *a*. The observer, therefore, can now, by placing his eye, B, behind M, between it and F′, readily intercept these rays, but yet he does not receive on his retina an image of *a*, but merely perceives a brilliant red reflection from A. The cause of this lies in the fact of the rays *a* M F′ being

convergent, and being still further converged by the dioptric apparatus of B (a normal eye) they unite into their focus between the lens and retina at *o* (indicated in Fig. 3 by the interrupted lines), where they become divergent and form a circle of dispersion, *c d*, on B's retina—hence there is no distinct image of *a*. By interposing a concave lens, L, however, between M and B these convergent rays are rendered divergent (indicated by the dotted lines), and entering B are again converged by the refractive media, so as to be focussed on B's retina at *a'*. The observer, B, will therefore now obtain a clear and well-defined image of the illumined spot *a*. No matter where B placed his eye so long as the rays from A were convergent he could only obtain a confused and indistinct image. This simple contrivance was improved by the addition of other plates of glass, which, together with suitable lens, were fitted into an appropriate tubular case, and was styled by its inventor *speculum oculi* or *ophthalmoscope*, and is no doubt the first ophthalmoscope, properly so called, by means of which the retina of the living eye could be seen. The subject was, I believe, first brought before the English profession by Dr. Sanders, in the *Monthly Journal of Medical Science* for July, 1852. Professor Wharton Jones announced in the *British and Foreign Medico-Chirurgical Review* for October, 1854, that Mr. Babbage had, seven years previously, showed him the model of an ophthalmoscope which "consisted of a bit of plain mirror, with the silvering scraped off at two or three small spots in the middle, fixed within a tube at such an angle that the rays of light, falling on it through an opening in the side of the tube, were reflected into the eye to be observed, and to which the one end of the tube was directed. The observer looked through the clear spots of the mirror from the other end." It is much to be regretted, for the sake of British ophthalmic surgery, that this discovery was not made public, or even utilized by the learned professor of ophthalmic medicine and surgery in University College Hospital, London, at an earlier period.

By means of Helmholtz's ophthalmoscope, just described, the image of the flame could be projected *successively* on different portions of the bottom of the eye, and thus gradually an examination of the whole fundus[a] might be obtained. Although the instrument was subsequently much improved by Epkens, by its deviser, and others, it was always difficult to manipulate, and the

[a] By the term *fundus* is meant all that part of the eye lying behind the lens and vitreous humour, viz., optic nerve entrance, retina, choroid, sclerotic, and blood-vessels.

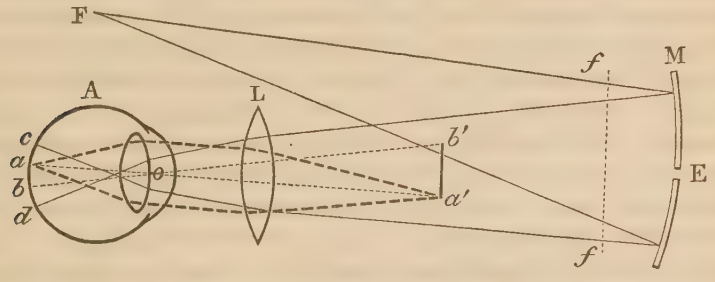
field of illumination being so very small, it was of but little practical value.

As I have endeavoured to explain, the illumination consisted in bringing to a focus exactly on the retina the image of a flame. Another method, conceived by Professor Brücke, consists in illumining the fundus by means of a *circle of dispersed light*. In 1847, Brücke published an account of his experiment, whereby the illumination of the interior of the eye could be easily and satisfactorily demonstrated. This experiment, which is based on a knowledge of the laws of refraction and accommodation, already briefly alluded to, consists in adjusting the vision for a shorter or longer distance than that occupied by a flame placed in front of the eye, so that instead of an image of the flame there shall be merely dispersed light on the fundus. While the observed eye A (Fig. 2) remains adjusted or accommodated for the distance A F, move the flame nearer to the eye—to F′; its image would now fall at f', but that the retina is interposed; therefore a part of the fundus $a\ b$ will be illumined by diffused light. From this circle of dispersion $a\ b$, rays are reflected outwards which must return, and form their focus, not in the flame from which they originated, but at the distance for which the eye is accommodated—F, at which place there will consequently be an image $b'\ a'$ formed of $a\ b$. If the observer's eye now occupy a position anywhere between b' and a' (behind and to the side of F), the returning rays are readily perceived, the luminosity of A's pupil becomes very apparent, and even the details of the fundus are occasionally seen. This image $b'\ a'$ is formed at a considerable distance from the observed eye, is inverted, large, faint, and indistinct, and the details, as a rule, not recognizable; hence, though perfect as a means of rendering the illumination visible, it is, as a means of seeing the individual parts, practically useless.

To the acute and reasoning mind of Helmholtz, however, this experiment suggested a practical idea, and in his hands assumed a new and great importance, for from it he deduced and perfected a method of obtaining easily a well-defined image of the fundus. This method consisted in projecting on the fundus a large circle of dispersion, and converging the reflected rays to a focus at a short and convenient distance, by means of a double convex lens of short focus held before the eye. Rays of light falling on this convex lens are refracted, and enter the eye convergently; they are still further converged by the crystalline lens of the

eye and brought to a focus somewhere between this and the retina; from this focus they diverge, and fall on the fundus in the shape of dispersed light; from this circle of dispersion rays are reflected from the fundus, and emerge parallel if the eye be accommodated for parallel rays (as a rule, however, they emerge slightly convergently). Meeting the convex lens in front of the eye, they are converged and united within the plane of the principal focus of the lens, at which place an image of the fundus is formed. The flame of a candle or lamp placed before the eye was used for the illumination, and a screen was fixed behind the flame, so that the observer was enabled to bring his eye close to the source of illumination, and thus be as nearly as possible in the direct line of the emergent rays. To obviate the inconveniences and difficulties attendant on this mode of illumination Professor Ruete had recourse to *mirrors*. Concave mirrors possess the property of rendering rays falling on their surface from a certain distance convergent; therefore in them we possess a means of producing a circle of dispersion in the retina. Fig. 4 illustrates the passage of rays to and from the fundus.

Fig. 4.



Let A be the observed eye, accommodated for distance, *i.e.*, for parallel rays, *o* its optical centre, and F the flame placed behind or to the side of A, so that the cornea and pupil may be in darkness. A concave mirror, M, of suitable focus is now held in front of A, so that rays falling on it divergently or parallel from F are reflected into the eye convergently, and illumine the fundus as dispersed light; from this circle of dispersion rays are reflected outwards to form at *f*, *f*, as already mentioned, a large inverted and indistinct image of the fundus; if we now interpose between A and M, at its focal distance from A, a double convex lens L, of short focus—two inches—the rays from M will be rendered more convergent by L, and still further so by the dioptric apparatus of A, so that they will

unite behind the lens of the latter and form on the fundus a circle of dispersion *c d;* from any points of this circle, such as from *a b*, pencils of rays will be reflected and emerge from the eye parallel to the lines (dotted) through the optical centre; they are, however, converged by L, and brought to their foci at *b′ a′*, at which place, then, there will be an inverted, magnified, and distinct image of *a b* (the interrupted lines indicate the course of rays from *a*, and similar ones may be traced from *b*). By making an opening in the mirror at E, and placing our eye there, and accommodating our vision for the distance E *b′ a′*, we readily become cognizant of the image. As is evident, this is an *aërial image situate between the observer and the convex* lens; it is also actually *inverted* and enlarged. If it be desired to obtain an enlargement of this image, it may be effected by placing behind the mirror another convex lens, but of a longer focal distance than L; or we may primarily produce a large image of *a b* by having L of a long focal distance, such as four inches, for such a lens will be of a lower converging capacity than one of two inches; and hence the image will be larger. By the above process we illumine the greater part of the fundus, and by using a convex lens of very short focus we obtain a very large field, *i.e.*, a view of nearly the whole illuminated portion, but the details are very small; by using a lens of longer focus the field of vision is curtailed, but the parts much magnified: thus, for instance, if we employ a lens of two-inch focus we obtain an image of the entire fundus, whereas if we use one of four we merely obtain an image of the optic nerve entrance. This mode of examining has been termed the *indirect*, or the examination of the reversed aërial image, to distinguish it from another, styled the *direct*—in which a *virtual erect* image of the fundus is seen.

Art. X.—*On the Use of Sulphite of Magnesia in the Treatment of Zymotic Diseases.* By H. R. De Ricci.

It is now upwards of two years since I last published, in the pages of this Journal, the results of my investigations in the treatment and prophylaxis of zymotic diseases by the administration of the alkaline and earthy sulphites, and especially by the sulphite of magnesia; but, although my pen has so long been silent on this highly interesting and most important branch of therapeutics, it is not because I

have relaxed from my labours, for I still have diligently pursued my investigations, administering the sulphites on every occasion in which I thought they would be productive of good, and carefully noting the effects. I have also collected, from different sources, the results of sulphitic treatment, both in Europe and in other parts of the world, and in the hope that this information may eventually be of service to medical science, I beg to lay it before my professional brethren.

I regret to find, upon enquiry, that up to this date the treatment by sulphitic salts has found but few disciples in these islands, a fact much to be regretted, as those few who have tried this remedy in appropriate cases have almost invariably been satisfied with the results. No doubt the treatment has been in many cases unsuccessful, often in consequence of the administration of wrong preparations; and, besides, I do not presume to assert that every case of pyemia, puerperal fever, scarlatina, or other zymotic affection, will be cured by the administration of sulphite of magnesia, but I do assert that a great majority of such cases will recover under this treatment, if the remedy be only taken sufficiently early. I say, if taken sufficiently early, and it will be easily understood why I insist on early treatment, because, if in a case of zymotic disease, of whatever species, the treatment is delayed until the blood is so loaded with poison, so deteriorated in quality, as to be no longer able to perform its normal functions; such a case, if treated by sulphites, is no more likely to recover than if treated on any other principle, or without any principle at all, or let alone to the *vis medicatrix naturæ;* the blood being thoroughly poisoned is incapable of maintaining life; and though the sulphites may be administered, and though they may arrest the further propagation of the poison by neutralizing or by rendering the blood incapable of being infected, still they can never restore to life the defunct blood corpuscles; and if, in a given case, the destruction of these most important organisms reaches an amount such as to leave an insufficient quantity of healthy blood corpuscles to carry on the normal functions of organic life, death must be the result. If, for instance, we assume that at least 50 per 100 of normal blood corpuscles, is the minimum quantity which will enable an animal to exist, and that in a given case of zymotic disease the destruction of these corpuscles reaches 60 per 100, such a case, even though saturated with sulphites, would of necessity end fatally, because, although the existing poison would be neutralized, and its further increase put a stop to, yet the

amount of healthy blood remaining would be insufficient for maintaining life, and death would be the inevitable result. Hence the importance of early treatment, of early administration of sulphites, while still a large portion of the blood is in a healthy state, and capable not only of carrying on life, but also sufficiently strong to throw off the poison, now rendered inert by the presence of the sulphurous acid. To the tardy administration of the sulphites I, therefore, in part ascribe their want of success in many cases in which they have been tried in these countries. Another cause of failure I attribute to the administration of *hyposulphite of soda*—instead of the sulphites, and especially the sulphite of magnesia—which, on enquiry, I find to have been the salt most frequently employed. I have long ceased to employ the hyposulphite of soda, and for the last two years have invariably administered the sulphite of magnesia; and this for three reasons:—Firstly, because when administering hyposulphite of soda the greater portion of the acid becomes oxydized, during its progress through the animal economy, and appears in the urine as a sulphate; Secondly, because it is a salt of hyposulphurous acid, and, as such, a less active anti-zymotic; and Thirdly, because it often causes troublesome diarrhea, while the sulphites of soda and magnesia never produce such effects; now, of these last two, I prefer the magnesian salt, and employ it exclusively for internal administration, as, not only, it is less unpalatable, owing to its insolubility, but in consequence of the atomic weight of magnesia, it contains bulk for bulk more acid than the soda salt; and, as the acid is the active ingredient, it stands to reason that the magnesian salt must be the most efficacious of the two; the sulphite of soda I employ, almost exclusively, for external applications, because, in consequence of its greater solubility, a much stronger lotion can be made with it than with the magnesian salt. The sulphites of potass, ammonia, and lime, are also active anti-zymotics, but in no way superior to the salts of magnesia and soda, while their very noxious taste render them undesirable.

It is very much to be regretted that so few physicians have brought the value of these remedies to the test of clinical experiment, by which, after all, every remedy must be tried, and stand or fall by the result; as I several years ago asserted, this remedy is perfectly harmless; is not like arsenic, mercury, iodine, or strychnia, a double-edged instrument, equally able to save or to destroy; neither is it one of those remedies which can only be administered in fractional doses, and of which a grain more may endanger the life of

a patient; I have myself taken six drachms of it in twenty-four hours without any evil result, and I never have had to prescribe more than half an ounce of it in practice, even in extreme cases; I cannot, therefore, conceive why a more extended trial of its properties has not been made. Perhaps it may be thought by some that I exaggerate to myself the result of my treatment, and that I naturally feel biassed in favour of a remedy, that I have so prominently brought into notice during the last few years; be it so; let my experiments on animals be forgotten, and the results of my treatment of diseases in man be ignored, still the important paper of Dr. Cummins on scarlatina, *Dublin Quarterly Journal*, No. 77, p. 11; the observations of Dr. Waters in same Journal, and the paper on Diphtheria by Dr. Hayden in the same Journal, No. 83, p. 86, go far to prove (even if we had no other evidence), that we possess, in the sulphites, a powerful agent, whose action in the animal economy well deserves to be studied.

The following case will be read with interest:—Last Winter I had under my care a gentleman, over eighty, who was suffering from the most aggravated form of pompholyx diutinus I ever witnessed. The bullæ daily appeared all over his body, principally affecting the lower half, and varied in size from a millet seed to a hen's egg; when first they cropped out their contents were clear; but in twenty-four hours became turbid, then opaque, and the raw surface, which appeared when the bullæ burst, remained long unhealed, and discharged an acrid bad-smelling pus.

The patient had been for some months in this state, and was gradually getting worse, when he came up from the country and placed himself under my care; every variety of treatment having been tried, both locally and constitutionally, without obtaining any beneficial result, I determined, in consultation with Dr. Hudson, on placing the patient under a sulphitic treatment, in the hopes of arresting the further increase of the disease, and thus giving nature an opportunity of eliminating the poison. As the patient was so advanced in years I preferred to commence by administering the remedy endermically, as I wanted besides to observe what effect the remedy would have on the secreting surfaces. I therefore dressed the raw spots with pledgets of lint soaked in a saturated solution of sulphite of soda in water, adding a little glycerine to the lotion; the immediate effect on the sores was most remarkable; by the second day they had completely lost their unhealthy dirty look, and had assumed a bright rosy hue, and were quickly skinning

on the edges, and the pain caused by such an extent of raw surface was completely relieved by the application. At this time the extent of the sores was so great that scarcely a sound spot could be found from the hips to the soles of the feet. Being curious to ascertain whether the remedy was acting only locally or was also entering the system generally, I got my friend Dr. Davy to examine some of the urine of this gentleman, when he found that it gave ample evidence of the presence of *sulphurous acid*. After some weeks of treatment by external application, during which a very great improvement could be observed, both in the size of the bullæ and their daily numbers, I commenced the internal administration of the remedy in ten-grain doses every fourth hour, using this time the sulphite of magnesia; no bad result occurred—no diarrhea, no loss of appetite, no nausea, but a still greater improvement; the bullæ now appearing only at intervals of two or three days, never larger than half an inch in diameter, and only one or two at a time; while at the commencement, when he first came under my care, the average number of bullæ which daily made their appearance was from twenty-five to thirty, their size averaging one inch and a half in diameter. The patient was now so far improved as to be able to go out to drive every day, and to enjoy life, whereas during the previous few months his existence had been a burthen to him; unfortunately, one day, he exposed himself to cold, got influenza, of which at the time there was an epidemic in Dublin, and in a few days he died—a result not to be wondered at when it is remembered that influenza at the age of eighty-two is almost always fatal. Two instructive facts are deducible from the above case: first and foremost, that sulphite of magnesia does not disturb digestion nor cause diarrhea, both of which bad effects have been laid to the charge of this remedy; and, secondly, that the sulphites, even when applied endermically, are absorbed and circulated *as sulphites*, and finally excreted by the kidneys undecomposed, *at least*, *in part*. This is a very important fact to note, because it has been asserted that if even my theory were correct, the treatment by sulphites could not stand the test of experiment, as the sulphites, during their progress through the economy, become oxydized and converted into sulphates, even before they reach the circulation. This I have repeatedly proved to be incorrect; and though some portion of the salt, no doubt, does become further oxydized, a considerable portion will find its way unchanged into the circulation, as I have been able to detect the

presence of sulphurous acid in the urine even when very small doses of the salt had been administered.[a]

The next example I shall bring forward is a case of multiple abscesses depending on the absorption of a zymotic poison. A sailor, twenty-four years of age, of a not very robust constitution, but still not of a strumous habit, returning from a voyage in the West Indies, during which he had visited places where there was yellow fever, was attacked during the voyage home by sickness of anomalous character; he had shiverings occasionally, and at times some vomiting and diarrhœa; the captain of his ship gave him some simple purgatives and other remedies, and he seemed at times to improve, but still the man complained of terrible lassitude, was considerably jaundiced, and after a short time was attacked with boils and abscesses; eventually he reached the port of Dublin, when he came under my care. I found, on examination, that he had whitlows on almost every finger, a very ill-looking semi-phagedenic ulceration of the glands of the groin, and several superficial sores on his legs and arms; his pulse ranged between 85 and 100, his bowels were relaxed, tongue coated, skin yellowish, and hot. Having carefully listened to his history I thought it probable that he had absorbed some animal poison, and that nature was busy eliminating it. I at once administered sulphite of magnesia, in scruple doses, three times a day, and dressed all the abraded surfaces with a saturated solution of sulphite of soda. After a week I increased the dose to one scruple, four times a day, and administered it in decoction of bark and compound tincture of bark; the result was most satisfactory; the sore in the groin became healthy-looking, the whitlows rapidly healed, and in three weeks he ceased to attend. Now in this case I am convinced that the man had been infected, while in the West Indies, with the poison of yellow fever, which from some cause or other having been prevented from pursuing its ordinary course, had contaminated the blood and given rise to those boils, whitlows, and abscesses, which were no more than the results of the efforts which nature was making to expel the poison; but as fast as nature expelled it at one point the poison

[a] Dr. Davy's mode of analysis is very simple and efficacious, and can be easily applied in a hospital ward. A large test tube being half filled with urine slightly acidulated with pure muriatic acid, a piece of starched paper stained with a weak solution of tincture of iodine, is suspended in the tube over, but not in contact with, the urine; if any sulphite is in the urine the iodine stain will be removed by the sulphurous acid gas which is evolved.

was re-producing itself in another, and eventually, in all probability, the patient would have sunk from exhaustion, but the presence of the sulphite which I administered checked the further increase of the poison, and then nature was enabled to effect a cure.

A short time ago I was attending a gentleman who was dying from phthisis senilis; his expectoration was distressingly profuse and was annoying him more than any other symptom; remembering the success which had attended the administration of a sulphite in a case of phthisis which I attended in 1862, I administered five grains of bisulphite of magnesia every third hour; the result was most remarkable; not only was the purulent expectoration reduced far beyond what I had expected, but the night sweats, which also troubled him excessively, almost entirely ceased; and though the medicine was unable to avert the final result, it was at any rate able to give ease and comfort to a dying man, which, next to saving life, is the great object of our mission in this world.

A few days ago a well-known French cook, in this city, came to me in great alarm about himself; he had given himself a very slight wound, a mere scratch with his knife, while dressing a piece of raw meat. I never saw a man looking more ill; he was jaundiced; he was so feeble as scarcely to be able to stand; his pulse was 100, his tongue foul, his bowels relaxed, and his wounded hand very much swelled, and excruciatingly painful. The wound though slight was dark and angry-looking, and red lines coursed up his fore-arm, following the tracks of the lymphatics. I wrapped up his hand and arm in lint soaked in a saturated tepid solution of sulphite of soda (which is much more soluble than sulphite of magnesia), and wrapped this again in gutta percha tissue, and administered sulphite of magnesia in ten-grain doses, four times a day. The improvement was rapid and manifest; the dressing had not been three hours on his hand and arm when he experienced the greatest relief from pain. In two days the swelling had almost entirely subsided, and in less than a week from the commencement of the treatment he was perfectly well. I have just stated that the application of sulphite of soda immediately relieved the pain, which at the time of my first visit was almost intolerable. I have had occasion in several cases to observe the extraordinary anesthetic property of sulphite of soda when applied to raw surfaces, especially in burns; and although I cannot well explain to myself the way in which this phenomenon occurs, still I have too often observed its recurrence to any way doubt the accuracy of my observation. I

had a case of very ill-conditioned sore throat under my care last Spring, which I feared might terminate in diphtheria. I administered sulphite of magnesia internally, and three times a day; I directed that half a scruple of the powdered salt should be insuflated by means of a quill into the pharynx, which last invariably produced the greatest ease from pain.

I have the notes of several other cases equally instructive and interesting, but I do not wish to weary my readers with useless repetitions; each case points in the same direction; and although each case was not a success, yet the disappointments have been few; and although up to this date both my theory and its application have found but few followers in this country, still I venture to predict that eventually the treatment of zymotic diseases by the administration of sulphites will be as fully recognized as that of ague by cinchona; nay more, for if paludal and intermittent fevers be the result of zymotic infection, as it is almost certain that they are, cinchona itself will be superseded by the sulphites both in the treatment and prophylaxis of those diseases.

Art. XI.—*Report on Scalds of the Larynx.* By Philip Bevan, M.D., T.C.D.; F.R.C.S.I.; Surgeon to Mercer's Hospital.

In the fifty-seventh number of this Journal, I published four cases of scalds of the larynx cured by the rapid exhibition of mercury; I now desire to record five other cases, in which the same treatment has been adopted with complete success. Two of these have been already published, by Dr. Croly, in the *Medical Press* of the 2nd May, 1866; one case occurred to Dr. Geoghegan, in the City of Dublin Hospital; one in Mercer's Hospital, to Dr. Ledwich; and another to myself in the same institution; so that, in nine consecutive cases the practice has been successful.

When we contrast this result with the excessive mortality which usually follows the treatment of the accident by tracheotomy it must be considered a most important improvement in practice. As to the fatality of the latter treatment it is difficult to arrive at anything like correct statistics, as the successful cases are usually published, whilst the unsuccessful ones are forgotten; but I think it will be easy to prove that it is one of the most fatal operations in surgery, when performed for this accident. I freely confess it

has been so in my own practice, and in that of many most eminent surgeons, whose cases I have had an opportunity of observing; and most of the trustworthy surgical writers acknowledge the same.

Thus Erichsen says, page 311, "in the majority of cases in which this operation has been performed the issue has been fatal;" and Gross, in his elaborate *System of Surgery*, Vol. II., p. 436, "that the operation is rarely of any permanent benefit is clearly proved by the statistics published on the subject, which show a sad disproportion of deaths to recoveries." Also in the able statistical report in the *Medical Times and Gazette*, nineteenth volume, New Series, p. 405, fourteen cases are narrated, with only three recoveries. Dr. Jameson records eleven cases, with only three recoveries.

Dr. Wilkes, in a most able report on diseases of children,[a] publishes two cases of operation, both fatal; and Dr. Bryant in the same volume,[b] publishes nine cases of the same operation, of which five were successful.

Statistics of scalds of larynx treated by tracheotomy :—

	Cases.	Deaths.	Recoveries.
Reported in *Medical Times and Gazette* (S. C.), - - - -	14	11	3
Reported by Dr. Jameson, - -	11	8	3
,, Dr. Wilkes, in Guy's Hospital,	2	2	0
,, Dr. Bryant, do.,	9	4	5
	36	25	11
Treated by mercury without operation—			
By Dr. Croly, - - - - -	2	0	2
By Dr. Geoghegan, - - -	1	0	1
By Dr. Ledwich, - - -	1	0	1
By Dr. Bevan, - - -	5	0	5
	9	0	9

Dr. Croly has proved by reference to numerous surgical writers that antiphlogistics followed by tracheotomy is the recognized practice for scalds of the larynx; but it was scarcely necessary to do so, as the statistics above referred to prove that it is the practice adopted in the leading hospitals of London.

My belief is, that tracheotomy for scalds of the larynx is based

[a] Vol. vi., Second Series, Guy's Hospital Reports, p. 133.
[b] Vol. vi., Second Series, Guy's Hospital Reports, p. 19.

on a false view of the pathology of the case. The croupy respiration during life, and the redness and swelling of the mucous membrane around the glottis after death, have led surgeons to suppose that all the disease was located in the larynx, hence in many cases the lungs have not been examined at all, or very superficially; but although, no doubt, the larynx is the part primarily injured, observation will prove that it is only the seat of a part, and not even the principal part of the effects of the accident. It is not easy to examine the chest of a child under such circumstances; on the one hand, they are cross, restless, and cry on any attempt to disturb them; and on the other, the loud croupy respiratory murmur renders it difficult to hear the chest sounds accurately; but if care be taken with patients, we will always be able to satisfy ourselves that the child is not dying of suffocation, and that sufficient air gets into the lungs, as long as those organs are capable of receiving it. Again, although *post mortem* examination of the larynx always shows redness and swelling of the mucous membrane, yet in any case I have myself examined there has been quite sufficient room for the ingress of air. In one case, seen many years since, of which I have notes, the mucous membrane was swollen, red, and puffy, but the rima glottidis sufficiently open to allow of respiration. Dr. Wilkes, on examining one of his cases, makes a similar observation. He says:—"The epiglottis and glottis were both swollen, but not to any great extent, so as to produce closure."

Dr. Bryant[a] describes the *post mortem* appearances in one case:—"The epiglottis and glottis were found to be *somewhat* swollen, but not to any extent."

In the Museum of the Royal College of Surgeons in Ireland is only one specimen. In the catalogue it is thus described:[b]—"The epiglottis and aryteno-epiglottidean folds are much thickened, and the opening consequently contracted." On examining the preparation, I find that, although the above changes are present, there is still plenty of room for respiration. The rima glottidis being very little, or not at all, affected. The swelling has principally taken place on the *back* of the arytenoid cartilages. In the Museum of Mercer's Hospital is also a single specimen. In it the mucous membrane is slightly swollen and wrinkled, but not by any means sufficient to close the rima. The latter specimens contrast remarkably with one of real œdema glottidis, in the Museum of the

[a] Page 21, *l.c.*

[b] Page 156.

College of Surgeons, taken from a man who died of suffocation, thus described :[a]—"The aryteno-epiglottidean folds form two pellucid bladder-like elevations, the epiglottis is plump, the mucous membrane on its anterior surface being raised by serous effusion." They also contrast with a drawing of œdemea-glottidis in *Cruveilhier's Pathology*, LV., pl. 2, where the above-named folds are so much swollen as to come into direct contact in the mesial line, and thus completely closed the glottis.

It being thus proved that the glottis, although contracted by swelling, is not sufficiently so to be the cause of death by suffocation, where are we to seek for it? I believe in the lungs themselves; this will be evident, first, by examining those organs during life, when it will invariably be found that sonorous and sibilant râles are heard, even in the earliest stages. These symptoms are noted in all my own cases, and in many recorded by others. Dr. Croly observes, in one of his cases:—"No dulness on percussion, but râles are heard." But the chief evidence will be in the state of the lungs after death. Even in the earliest stage they are thus described[b] by Dr. Bryant, in a case where death took place as early as three hours after the accident (no doubt a very rare occurrence):—"The lungs were found gorged with blood; trachia and bronchi congested and full of mucus; cervical veins and right side of heart full of blood."

At a later period after the accident, whether the operation has been performed or not, the state of the lungs is that of intense inflammation of various kinds. In a case noted by myself many years since, the trachea was red, both lungs were red, solid, scarcely at all crepitating on pressure, except towards the apex and along the anterior borders. In the cases reported in the *Times and Gazette*, *l. c.*, in which the lungs have been examined, in one there was acute pneumonia, in another, No. 10, right lung fixed by pleuritic bands and lower lobe hepatized. No. 11. Softening of right lung and surrounding inflammation round its root. No. 13. Trachea inflamed, and lungs congested. No. 14. Alone no evidence of bronchitis. In remaining cases the lungs were not examined.

In one case of Dr. Bryant's, "the mucous membrane was acutely inflamed, tubes filled with mucus, the lungs themselves also involved." In another case he says:—"Broncho-pneumonia

[a] Catalogue pl. 156. [b] *l. c.*

appeared, proving fatal on the fourth day." In another case he found "the air tubes inflamed and filled with mucus; right lung completely consolidated, left one partially so."

Dr. Wilkes still more fully describes the *post mortem* appearances in (Case 49):—"The trachea and bronchi completely filled with tenacious purulent mucus, and some of them had also complete lymph casts; the mucous membrane highly vascular. Both lungs were more or less affected with lobular pneumonia, and on both sides was acute pleurisy."

In case 50 "the whole of the air tubes were inflamed and filled with secretion; there was pleurisy on the right side; a considerable portion of the lower lobes, as well as parts of the upper, were consolidated by diffuse inflammation." The same gentleman exhibited at the Pathological Society, April, 1860,[a] a specimen of the same accident:—"Acute inflammation of the whole of the air passages, combined with pneumonia; the under surface of the epiglottis, the interior of the larynx and trachea were covered with a false membrane, while the bronchial tubes were filled with purulent mucus." Thus I have proved that although the larynx is the part primarily affected, the child dies, not of the laryngeal obstruction but of the pulmonary disease; and in favour of this explanation I am happy to be able to adduce the valuable opinion of Dr. Geoghegan, who (at the meeting of the Surgical Society, reported in *Medical Press*, 2nd May, 1866) says "that Dr. Bevan had struck the right chord, that they had to deal with, not merely a case of œdema of the glottis, and obstruction from that cause, but with a general inflammation commencing in the lung, proceeding to the bronchial passages, and then to the smaller ramifications, ending ultimately in asphyxia."

How the lungs become so soon engaged may be a point of some difficulty to explain; it may be either that the child, in attempting to resist the swallowing of the water, some of the vapour heated to nearly 212° mixed with the atmospheric air passes directly into the trachea, and causes inflammation of the delicate lining membrane of the bronchi and air cells; or it may be that the sympathy is so great between the different parts of the respiratory organs in children, that as soon as the glottis is inflamed, the disease spreads with rapidity over the entire respiratory tract, a fact which every one conversant with disease of children will acknowledge to be very

[a] 12th May, 1860, Medical Times and Gazette.

likely. But no matter how the fact may be explained, if it can be distinctly proved that the child dies, not of the disease of the larynx, but of that of the lungs, it must be most illogical to apply our remedies to one of the symptoms, to the neglect of other and more important ones: instead, therefore, of removing a mere mechanical obstacle, which is only part of the disease, our attention should obviously be directed to the more dangerous and fatal one—the disease of the lungs. With this object in view, our main reliance must be placed on mercury, given so rapidly as to bring the child under its influence before the disease arrives at the stage when coma and congestion of the brain have set in. The treatment should somewhat vary according to the time which has elapsed since the accident; if seen in the earliest stage, before dyspnea has set in; the stomach, if full, should be unloaded by an emetic, and if the bowels have been constipated, a simple enema should be at once administered. By these means the action of mercury will be assured, and rendered more rapid. If the child is of full habit, or even of ordinary strength, I would apply a leech or two to the upper bone of the sternum; and as soon as the stomach had settled after the emetic, at once commence with the calomel, half-grain doses repeated every *half* hour. I would not wait till dyspnea had set in to commence this treatment, but would adopt it as soon as I had ascertained, by examining the epiglottis with my finger, that it had lost its natural elastic feel, and become enlarged and hard. Should the symptoms subside, it is easy to stop the treatment, or diminish its activity. If symptoms continue, or increase in severity, as is usual, then it is absolutely necessary to continue the mercury till either the salivation takes place or the well-known green stools are produced. In the meantime, the child's strength should be supported by good chicken-tea, or beef-tea, if it can be persuaded to swallow.

The temperature of the room should be kept up to about 60°; but instead of the bed being enclosed by curtains, free access of air should be permitted.

Stuping seems to relieve the pain of the throat, and is certainly of use in increasing the bleeding from the leech-bites, thus keeping up a moderate drain, and preventing the necessity for renewed application of them; but our chief reliance must be placed on the mercury. In every case I have seen the symptoms improve as soon as the green stools were produced. In some cases the patient appeared better a short time before that occurrence; but as a rule it

was immediately after it. In some cases the effect was instantaneous. In one case, on entering the hospital I enquired from the resident pupil how the patient was; he informed me that she was no better. On entering the ward I was surprised to find her sitting up in bed, breathing very much better, and apparently greatly relieved. Having questioned the nurse, she informed me that the resident had seen the child about a quarter of an hour previously, when she was apparently not better, but since he left the ward she had a copious green evacuation, and almost immediately she became vastly relieved. Dr. Geoghegan remarked the same rapid improvement in his case, and Dr. Croly reports:—"At twelve o'clock the child in heavy stupor; at half-past two bowels affected (green-coloured evacuation); at three o'clock breathing is in every respect better."

If the child was not seen till dyspnea had set in I would at once use the same treatment; but in addition I would rub his chest and axilla with mercurial ointment, and probably give the calomel in one or two grain doses every half hour, according to the age of the patient. The leeches should be repeated, if the child's strength will admit of it, but the effect should be most carefully watched before each leech is applied

Should the case not be seen till the child is semi-comatose, with congested lungs, and brain poisoned by venous blood, no doubt in some cases no treatment will be of use, but certainly tracheotomy can in no way either cure the inflammation of the lungs, or the congestion of the brain. The most efficacious treatment would be, if the child could swallow, to give the mercury, and use frictions over the entire body; to apply blisters over the chest, so as to produce, at least, redness of the skin, and over the surfaces to apply mercurial ointment; to apply heat to the extremities, and, if possible, to give stimulants in small and frequently repeated doses, as Dr. Croly did, in one of his cases, with success.

It may be said that a few cases have recovered after tracheotomy, and that (as I have remarked in my former paper) patients almost invariably appear better for some hours after the operation. In answer to these observations I would say, that they would have recovered more frequently without the operation, which is in itself one not unattended with danger, an opinion I have already expressed, and which has been fully borne out by cases cited by Dr. Wilkes in his already quoted memoir.[a] That the children appear

[a] *l. c.* sp., 132.

better after the operation is to be explained by the temporary removal of the congestion of the brain and lungs from the loss of blood, just as in other inflammations and fevers the loss of blood gives temporary relief, only to be followed by greater collapse and worse symptoms.

Two objections may be urged to the above treatment:—First, that leeching and tartar emetic have sometimes succeeded; and, secondly, that the mercurial treatment is either too slow, as Dr. Watson has urged, or too dangerous if given with sufficient rapidity.

To the first objection it may be answered that antimony very frequently fails. I have seen it used in very many cases. It was the treatment always adopted in Mercer's Hospital, and I have used it myself in all my own cases, and only resorted to tracheotomy after the antimony had failed. Besides, I look on antimony as a most dangerous medicine in young children. I have seen it produce most alarming symptoms; and in some cases, such as Dr. Croly's, the state of exhaustion of the patient would render it perfectly inadmissible. I never use it except to unload the stomach, and where that has been empty, I avoid it. I very much suspect that some surgeons who boast that they have had *extensive experience* in this class of cases, and that with them the antimonial practice has been completely successful, have mistaken many cases of mere scald in the mouth, which are *very common*, for the *more rare* and far more fatal accident, scald of the larynx.

To the objection, that the mercury will not act sufficiently early, I have only to adduce the above cases, which show that its effects can be produced in eight hours in some cases, and generally from eighteen to twenty-four hours; whilst children, even if left to themselves, live much longer after this accident. As to the danger of giving the mercury so rapidly—at first, I ventured with much doubt to give so much in so short a time, to young and delicate children; but having administered as much as forty-eight grains in twelve hours, without the slightest bad consequence, except a very moderate salivation in two cases, and a smart but by no means alarming catharsis in others, I have now no hesitation in using mercurial inunction, and calomel in from one to two grain doses every half hour according to the severity of the symptoms, and age of the patient. The leeching I use with more caution. I consider it of great value in strong children, by relieving the urgency of the dyspnea, and probably accelerating the absorption of the mercury.

The cases now published, with the kind permission of Drs.

Geoghegan and Ledwich, although I have only imperfect notes of them, were, when I saw them, fully as bad as any of the cases I had myself treated in former times by tracheotomy, with the usual fatal results. In fact, Dr. Ledwich's and my own cases, from their early age, were even more hopeless than ordinary; and in the latter case the difficulty of breathing came on with extreme rapidity, only two hours after the accident. I did not see Dr. Croly's cases, but from the description there can be no doubt of their severity.

Dr. Geoghegan's *Case.*—A. H., on 9th March, 1865, was admitted into City of Dublin Hospital. *In company with Dr. Geoghegan, I saw her* at 8 o'clock p.m. She was a very stout, fat child, four years old; had swallowed boiling water out of a kettle, five hours previously. She was crying, but could not say where she felt sore. Dr. G. examined the throat, and stated that the tonsils were quite white. She is coughing, and keeps her hand to her throat.

Dr. G. ordered 1 gr. tartrate of antimony in 4 oz. water; a dessert spoonful to be given every ten minutes till vomiting produced.

An enema immediately, and as soon as the stomach settles after the vomiting; 1 gr. of calomel every half hour, till green stool produced. Two leeches to the sternum, and stuping over the throat.

On the following day Dr. Geoghegan kindly furnished me with a note, stating that extreme difficulty of breathing came on at about one in the morning, that the leeches bled freely. Copious green stools followed the administration of the calomel, and the symptoms gradually subsided.

On examining the fauces in the morning, a large grey slightly œdematous patch was seen still adherent; but the mother, finding that the child was relieved, took her home, not being able to remain away from her family.

Dr. Ledwich's *Case.*—Fanny Smith, aged two years, a healthy child, attempted to drink boiling water from a kettle, at 10 p.m., on Saturday, 6th March, 1864. She remained well till one in the morning, when her breathing became difficult and stridulous. She was brought to Mercer's Hospital at a quarter before five, on the morning of the 7th, labouring under the usual symptoms.

I saw her at 9 a.m., with Dr. Ledwich. She had then stridulous breathing, pain in the throat, and rapid respiration. The epiglottis was large and hard. Dr. L. ordered one grain of calomel every half hour; leeches to sternum. He did not give an emetic, the child's stomach being empty. At half-past 6 p.m., bowels were opened, the stools being green, and a second time at 10 p.m. The breathing gradually became easy, and on the following day she was quite well, except some diarrhea and weakness. This case, of which I have only the above short notice, was fully as bad as any of the previous ones.

Under my own care.—Margaret Dowling, aged one year and eight months, admitted into Mercer's Hospital at half-past nine o'clock on Thursday, the 7th September, 1864, having attempted to drink water from the spout of a kettle just taken off the fire, at 5 p.m., she spat some out of her mouth. Her mother states that she remained well till about 7 o'clock in the evening. Dr. Ledwich saw her for me at 10 p.m. She was then labouring under intense dyspnea, with stridulous breathing. He ordered a leech to the sternum, and 1 gr. of calomel every hour. At 11 p.m. I saw her. She was breathing with great difficulty. Her face was nearly livid, and mucus was rattling in her throat. With great difficulty I introduced my finger and felt the epiglottis round and hard, but I could not get a good view of the fauces, as she closed her jaws spasmodically whenever I attempted to keep her mouth open. The leech had been applied, and has bled freely, and Mr. Samuels, the resident pupil (who attended the case with the greatest care), informed me that she is better since its application. If so, she certainly must have been very bad, for although she is dozing, her breathing is excessively difficult, almost gasping; mucus rhonchus over the greater part of the chest, but it sounds clear on percussion. I applied a stupe-cloth over the throat and leech-bites, and they began to bleed again, and I ordered another leech to be applied as soon as the bleeding ceased, should the infant's strength permit it; the calomel to be continued every half hour in grain doses.

8th.—At visiting hour, 9 a.m., the resident informed me that she remained in the same dozing state, with intense difficulty of breathing all night; too weak to admit of more leeching; but about six this morning she rather improved, and at 7 o'clock purging of green matter commenced. She has been better since. Her

breathing is still difficult, and the mucus is still rattling in her throat, but she is decidedly better. Her eye is clearer, and she is no longer in the dozing state in which she lay last night.

Whilst I was in the ward she had another copious green evacuation.

I ordered one grain of calomel, every fourth hour, and to continue stuping.

During the day the purging continued, and her breathing improved every hour.

9th.—The child is breathing quite well, and the mother insists on bringing her home.

She called at the hospital every day to inform me that the child had still some cough, but on the third day was quite well. Her mouth was not sore, and her bowels regular.

Art. XII.—*Case of Protracted Utero-Gestation; with Remarks.* By C. Joynt, M.D.; L.K.Q.C.P., &c.; Assistant-Surgeon 14th Bo. N.I.; late Professor of Midwifery Grant Medical College; Examiner in Medicine and in Medical Jurisprudence, University of Bombay; and Surgeon to the Bombay Gaol, and to the House of Correction.

I wish to bring under notice the particulars of a case of utero-gestation protracted for several weeks beyond the average period; and I have the less hesitation in doing so as the subject of it was under my constant observation, not only during pregnancy, but before its commencement, as well as for some time after its termination.

A lady, aged about thirty years, who had been pregnant six times, the pregnancy on two occasions ending in miscarriage, came under my care in November, 1863. She complained of frequent and often excessive menstruation, as well as of that form of neuralgia of the ovaries described by Dr. West as "ovarian pain," and by Dr. Churchill more fully as "ovarian irritation." She was also the subject of frequent hystero-epileptic fits. It would appear from the history she gave me that she had suffered for some years previously from functional derangement of the sexual organs, of which pain was a constant symptom, for which she had been subjected to a long course of local treatment, which included the repeated application

of caustics, and on one occasion of caustic potash to the os uteri. The uterine symptoms for which she consulted me were referred by her to a miscarriage in the fifth month of pregnancy, which occurred in the preceding April, about seven months before she came under my care. I found no evidence of any organic lesion, either of the uterus or of the ovaries.

This lady menstruated in December, 1863, the discharge appearing on the 28th, and ceasing on the 2nd January, 1864. About the middle of the latter month she suffered from troublesome nausea and vomiting, coming on every morning and subsiding towards evening. This morning sickness was of a very distressing and intractable character, and was only very slightly mitigated by medicine. Its characteristic nature, and its persistence made me attribute it to pregnancy, and to that alone, especially as it had been an early and troublesome accompaniment to all her former pregnancies; and my opinion was confirmed by the non-occurrence of menstruation at the expected period. This morning sickness continued almost without intermission, though occasionally slightly alleviated by medicine, from the 14th of January until the last week in March. She quickened on the 28th of March, when she first distinctly felt the fetal movements. Her pregnancy, evidenced by all the ordinary phenomena, proceeded favourably until the 12th of May, when she was threatened with miscarriage. She had severe uterine pains and some hemorrhage, which, however, yielded to treatment and to the enforcement of rest in the recumbent posture. Abdominal enlargement advanced in the usual manner until the 21st of August, when she had a severe hystero-epileptic fit, which lasted for seven or eight hours, during which she was almost completely unconscious. This fit was sufficiently alarming to cause some apprehension of an unfavourable termination, and was followed by a state of somnolence, which continued for about thirty-six hours. On recovering from this somnolent condition, she ceased to feel the movements of the child, for the first time since the 28th of March, nor was she again cognizant of them for some days. At this time I made a tactile and auscultatory examination of the abdomen, which I found to be as large as is usual at the seventh month of utero-gestation; but I could not detect any fetal movements. A well-marked uterine souffle or murmur was audible, but the pulsations of the fetal heart were not heard. This, of course, was not to be wondered at, as the lady was remarkably stout, and the consequent thickness of the abdominal parietes

might well prevent the fetal heart-sound being heard. On the evening of the 3rd October, having, as she believed, arrived at her full time, she was taken with labour pains, which increased in force till the following morning, when they abated, and disappeared during the day. The pains recurred on the evening of the 4th; increased during the night, declined towards morning, again disappearing on the 5th. This sequence of phenomena was repeated for four or five days successively. During an intermission I made a vaginal examination, and found the cervix uteri quite obliterated, and the os soft and patulous, so that, were it desirable, I could have introduced the point of my finger. Uterine pains, observing nearly the order and the duration described, continued to recur at uncertain intervals until the 21st of November, when I was hastily sent for near midnight. On arrival I found that labour had actually set in; the os uteri was dilated to the size of a shilling; parturition proceeded favourably, and she gave birth to a mature male child, at 5 o'clock, a.m., on the 22nd November, precisely seven weeks from the first appearance of labour pains. With regard to the child, the only circumstance at all noticeable was that it was born with a tolerably good head of hair, the lady observing that none of her former children had any hair whatever at birth.

For a week or ten days previous to the 3rd of October, there were present the usual indications of approaching labour, a sensible falling down of the gravid uterus towards the pelvis, and consequent relief from the distress caused by its pressure against the diaphragm, as well as slight apparent diminution of size in the abdomen itself. During the seven weeks which intervened between the first occurrence of uterine pains and the expulsion of the child there was an actual decrease of nearly two inches in the circumference of the abdomen, as ascertained by measurement.

I may here mention that on three separate occasions, subsequent to the occurrence of the spurious labour pains, there was a discharge of water from the vagina, each time to the amount of nearly, if not quite, a pint, according to the lady's own estimate. She thought the discharge was caused by rupture of the membranes, and each time expected labour to follow at once. This fluid, doubtless, accumulated in the space that sometimes exists between the amnion and chorion; for, though these membranes are generally in close apposition during the later months of utero-gestation, they are separated in the earlier months, the intervening space then containing a gelatinous fluid. We know, at all events, that in the later

months of pregnancy, fluid is sometimes found in this space, constituting a false amniotic fluid, which, when discharged at the beginning of labour, may be mistaken for the liquor amnii. Whether or not this was the source of the fluid discharged in the present instance is not of much moment as it has no obvious connexion with the protraction of pregnancy. It is, however, interesting as showing that a considerable quantity of fluid may accumulate external to the amnion. The discharge of the fluid was followed each time by relief from the sensation of fulness, and from the pain which she suffered.

Her convalescence was more favourable than after any of her former labours, all of which were attended with severe floodings, by which her life was more than once imperilled. So great was the loss of blood, and so difficult its arrest when last confined at the full time, in 1861, that she was advised by three medical gentlemen who attended her, never again to run the risk of pregnancy, as it would in all probability compromise her life. This advice she had ever in mind during her pregnancy, to the termination of which, she consequently looked forward with no small apprehension.

The period of utero-gestation in the case now related was, unquestionably, considerably protracted beyond the average limit of 275 or 280 days. It remains to fix as nearly as may be possible the limit of this protraction. The case supplies data sufficient to determine accurately the minimum duration of the pregnancy, and, within a day or two, its real duration. These data are:—

(*a*). The date of last menstruation, 28th December, 1863, to 2nd January, 1864.

(*b*). The occurrence of characteristic morning sickness in January.

(*c*). The perception of the fetal movements on the 28th of March, and their persistence.

(*d*). The threatened miscarriage in May, after the completion of the calculated fourth month of pregnancy, corresponding to the period at which she actually miscarried on two former occasions.

(*e*). The existence of a well-marked utero-placental murmur, with abdominal enlargement in August; and

(*f*). The occurrence of spurious labour pains in the beginning of October (marking, as I interpret them, the termination of the normal duration of gestation), when the cervix uteri was found obliterated. Any one of these signs taken by itself might be open to objection; but, in the aggregate, they afford evidence as strong as is ever likely to be adduced in proof of protracted gestation.

Besides these, however, my case furnishes another fact of importance in fixing the date of conception. My patient was, at the time I speak of, separated from her husband in order that she might be under my immediate care, being only visited by him occasionally. He was absent from the 26th of December to the 6th or 7th of January, when he returned and remained with her till the 10th. Before he again visited her the characteristic morning sickness had satisfied me that pregnancy had already commenced. This definitely fixes the 10th of January as the latest date on which conception could have taken place; so that the minimum duration of pregnancy must have been 317 days, or about six weeks more than the average.

It would be mere waste of time to discuss the value of the individual data on which the duration of pregnancy has been calculated. One of them, however, namely, quickening, perhaps requires a few remarks. As regards this sign there might be a possible mistake if it occurred in a primipara, but occurring as it did in a highly intelligent woman who had already experienced the sensation on six previous occasions, there is scarcely room for any doubt, and the less as the fetal movements continued to be felt, and with increasing distinctness afterwards. The unusually early period of pregnancy at which this sensation was felt deserves also to be noticed. The distinct perception of the movements of the child within eleven weeks and two days from conception is very uncommon. Denman, who is followed by most obstetric writers, says:—"Quickening happens at different periods of pregnancy, from the tenth to the twenty-fifth week, but most commonly about the sixteenth week after conception." Denman, however, gives no example, as far as I know, of its occurrence so early as the tenth week. Dr. Montgomery, of Dublin, the author of the most classic work on pregnancy, and of the ablest essay on its duration in our language, referring to Denman's opinion, writes:—"I confess that, with all my respect for Denman's authority, and appreciation of his sagacity and truthfulness, I felt for a long time sceptical as to the occurrence of quickening at such early periods; but in addition to the case above related, I met with another, more recently, at a still earlier period, so that I can no longer doubt." In this quotation Montgomery refers to two cases, related by himself, in which quickening occurred in eleven weeks and two days, and in ten weeks, respectively. He was probably in error in fixing the time of quickening in the latter case, for, finding that 213 days intervened between the perception of

the fetal movements and delivery, he deducted that interval from 280 days, the usual period of gestation, and the difference, 67 days, he considered as the time that elapsed between conception and quickening. To me it appears more probable that gestation was protracted than that quickening took place in the tenth week, for it is difficult to believe that the movements of the child can be distinct enough to be felt by the mother at so early a period. A similar mode of reckoning would make quickening to have occurred as early as the fortieth day in my case.

In cases of protracted gestation, where conception could not be traced with certainty to a single coitus, some physicians have been wont to deduct a certain number of days from the date of last menstruation in order to fix the commencement of pregnancy. Although conception is generally believed to take place soon after the cessation of the menstrual flux, yet it, undoubtedly, sometimes happens, and according to some obstetricians, often to be deferred till near the following period. As in any particular case it would be impossible to determine whether conception had immediately followed one menstruation, or merely preceded the one that is missed in consequence of its occurrence, those observers who have desired accuracy, chiefly, have deducted a period equal to a menstrual interval from the last menstruation, so as to fix the time of conception. For this purpose the distinguished Professor of Obstetrics in the University of Edinburgh, Sir J. Y. Simpson, allows a period of 23 days, and Dr. Murphy, late Professor of Midwifery in University College, London, has deducted 28 days from his cases; so that in the cases of protracted gestation recorded by these physicians, any error must be on the side of defect, and not of excess, as regards duration. In my case greater accuracy was obtainable without the necessity of having recourse to this plan; indeed, menstruation may be altogether excluded from the account. Its minimum duration was, as I have shown, 317 days, a duration which has few parallels in the annals of British medicine.

A very brief notice of those cases of pregnancy which are recorded as having attained a duration of 300 days, or more, may not be out of place. Dr. Merriman, who first in England investigated this subject, collected 114 cases in which gestation was reckoned from the last day on which the menses were seen, but excluding that day; in only four of these was gestation protracted beyond 300 days; in one it reached 309 days. Merriman's cases are, however, unsatisfactory, inasmuch as he made no allowance for

the probable interval between menstruation and conception. Dr Montgomery collected 56 cases, considered by him to be perfectly reliable, in which the date of fruitful intercourse was known, but in only one did the duration of pregnancy exceed 300 days, the husband having been with his wife on the nights of the 21st, 22nd, and 23rd of February, and labour occurring on the 21st of December; pregnancy lasted in this case, therefore, from 301 to 303 days. Dr. Reid, in his carefully collected series of 43 cases, in which gestation was counted from a single intercourse, gives only one in which it extended to 300 days. Three cases are recorded by Sir J. Y. Simpson in which gestation was protracted to 301, 309, and 313 days, respectively, after deducting 23 days from the date of last appearance of the menses. Amongst Dr. Murphy's cases two are found in which pregnancy is stated to have been protracted to 314 and 324 days, respectively, after deducting 28 days from date of last menstruation. Murphy's cases are, however, open to the objection that the subjects of them were hospital patients, on whose statements he was obliged to rely exclusively, and such statements are exposed to many sources of error, intentional as well as unintentional. The notes of the case which lasted 324 days were not taken by Murphy until six months after its termination. As he was satisfied with the data on which he calculated their duration, and as Dr. Taylor, in his *Manual of Medical Jurisprudence*, treats them as authentic, it is not for me to impugn their accuracy; their value would be much greater than it is had Murphy had the opportunity of observing them throughout. The late Prussian medical jurist, Dr. Casper, Professor of Forensic Medicine in the University of Berlin, commented upon them very severely, and blamed Taylor for attaching so much importance to them. More recently Dr. Murphy has met with another case in which he believes that pregnancy was protracted to 357 days, after deducting 28 days from the last menstruation. This case is recorded in the second edition of his *Lectures on the Principles and Practice of Midwifery;* the subject of it was a lady who had previously borne three children, two at the usual term, the third a fortnight later. The menses were last seen on the 10th of February, 1861; the motions of the child were felt about the middle of July; she expected her confinement in November, and felt her pains in that month, but the receipt of a letter gave her such a shock that the pains disappeared, and did not return till the 2nd of March, 1862, when she was delivered of a "feeble and diminutive" child. It appears that Murphy only saw

this lady once, when her pregnancy had already, as she thought, exceeded the average period, so that the value of the case is much impaired from this circumstance. Dr. Taylor, in the sixth edition of his Manual, refers to a case reported by Dr. Power, in his work on Human Pregnancy, in which gestation is said to have been protracted to 325 days. Taylor also mentions, in the same place, a case communicated to him by Mr. Chattaway, a former pupil. The healthy wife of a farmer, aged 36, menstruated for the last time in December, 1855, and quickened in the beginning of April, 1856; in the middle of September she was seized with severe false pains, accompanied with a discharge of mucus tinged with blood; and on the 19th of November was delivered of a female child of the average size. In this case pregnancy was apparently protracted, after deducting 28 days from last menstruation, to 330 days. Casper, referring to this case, says:—"It admits of another mode of computation: if we suppose that the last menstruation, 'in' December, occurred about the end of the month; and further, that the conception took place towards the end of January, then we have only a pregnancy protracted for about 300 days, which is nothing incredible. Moreover, nothing is said as to the usual menstrual cycle of this woman — nothing (so necessary for a critical estimation of the alleged perception of fetal movements at so early a date) as to whether the woman was a primipara. In what other science, may I ask, has there existed for centuries so total an omission of all critical inquiry as I have just proved to exist in forensic medicine, precisely the one of all others in which the phenomena observed require to be most sharply criticised!" Dr. Guy, Professor of Forensic Medicine in King's College, London, mentions a case (in the second edition of his *Principles of Forensic Medicine*) in which the minimum duration of pregnancy, as determined by the sudden death of the husband, was 308 days. The case was communicated to him by Mr. Hewitt, a former pupil of King's College, but no particulars of it are given.

The only other cases of pregnancy protracted beyond 300 days, which I have met with in the records of British practice, are those related by Mr. Robert Annan, of Kinross, in the *Edinburgh Medical Journal*, for February, 1857. In Mr. Annan's three cases he considers that gestation was protracted—in the first, for six weeks beyond the expected time; in the second, to 327 days; and in the third, to about the same period. These cases occurred, twenty, seventeen, and six years, respectively, before he related them, with

"some diffidence," as "nearly as his notes and recollections permitted." In Mr. Annan's first case, the woman, considering herself at the end of the seventh month of her sixth pregnancy, had her nerves so strongly affected at a public mesmeric exhibition, as to be threatened with miscarriage. Instead of this, however, her confinement was postponed from the 5th of June, the day she expected it, to the 21st of November. In his second case, Mrs. ——, aged 44, married in June, 1839; ceased menstruating in the end of December, and expected her confinement at the end of September or beginning of October, 1840. This event, however, did not take place till the 21st of November, when she was delivered, by the forceps, of a still-born female child. In his third case, Mrs. ——, aged 26, menstruated on the 1st of April, 1836, and was delivered in February, 1837, of a male child, which weighed 10 lbs. 14 oz. Mr. Annan comments on this case, thus:—"Though the corroborating testimony of a mother who had borne live children at the full period was wanting, the defect was here amply made up by the male parent, a person of respectable status in society, who, on my expressing concurrence in the belief of the protracted period in this pregnancy, at once frankly stated that of this there could be no doubt whatever, as, during nearly the whole period above mentioned, he had not approached the nuptial bed." "As far, then, as this case goes," he proceeds, "it affords almost decisive evidence of protracted pregnancy; and, deducting a period of days for the interval between insemination and conception, the case seems as complete as the size of the child, and respectable human testimony, can make it." Why, then, did Mr. Annan allow twenty years to elapse before recording it, and then only from memory! It is to be feared that if evidence more decisive than that furnished by his cases could not be adduced in favour of protracted pregnancy, the opinion expressed by Drs. Davis, Gooch, and Sir C. M. Clarke, in the Gardner Peerage Case, in 1825, would still be considered incontrovertible, viz., that the limits of gestation were fixed, and that protracted pregnancy was impossible. Yet these cases are referred to by Dr. Barnes, in the fortieth number of the *British and Foreign Medico-Chirurgical Review*, as illustrations of the vexed question of the duration of pregnancy, and without any expressed or implied doubt of their perfectly reliable character.

In Germany, Elsässer, "that most cautious enquirer," as he is designated by Casper, who is apparently sceptical as to the existence of the quality of caution in British obstetric statistists, in a paper

containing the particulars of 260 cases of pregnancy, entered in the Journal of the Stuttgart Lying-in Hospital, states, that in eleven of his cases gestation was protracted to periods varying from 300 to 318 days, reckoning from the last appearance of the catamenia.

In America, cases of protracted gestation have been frequently recorded. Professor Meigs, of Jefferson College, Philadelphia, in his work on *Obstetrics*, relates a case which he met with, in which pregnancy is alleged to have lasted 420 days, or nearly fourteen months, as ascertained chiefly from the statements of the woman herself, an hospital patient, and thus remarks upon it:—"Of course in relating this case, I do not consider myself responsible for the truth of the statements, further than they are worthy of confidence, in view of the character of the patient herself, and as the facts came under my notice. She had the appearance of perfect candour and sincerity in all that she said about it, and I have no doubt she thinks her pregnancy began in July, 1839, and ended on the 13th September, 1840." Besides his own case, Meigs relates one from Professor Asdrubali, in which a lady was affected with symptoms attributable to conception, on the 1st of March, 1796; and her husband died on the 22nd of the same month. On the 22nd of April, 1797, she was seized with symptoms of labour, and seven days afterwards gave birth to twins. This lady is stated to have had labour pains at the beginning of her ninth month, and to have discharged a large quantity of watery fluid from the uterus; these pains continued to recur for eight consecutive days. Dr. Meigs "cordially accepts the story af the accomplished author," and says that he finds in it nothing impossible to believe, more particularly as he has confidence in the case related by himself. Dr. Atlee, of Philadelphia, has recorded two cases in which gestation is alleged to have been protracted to twelve months, and to twelve months and seven days, respectively, and states that he "has not the least doubt of the truthfulness of the evidence in the cases." Dr. W. Stone, of Indiana, reported a case in the *Boston Journal*, for May, 1859, in which gestation is said to have been protracted to 330 days, reckoning from last intercourse. The subject of it was a married woman, who menstruated in February, 1858, and whose husband died on the 17th of March—the last intercourse having taken place on the 10th of the same month. She quickened on the 8th of July, and on the 3rd of February, 1859, gave birth to a female child, weighing 8lbs., whose osseous system was "extraordnarily developed." The mother had always sustained an

irreproachable character; and five physicians who investigated the case, were satisfied that it was one of protracted gestation. No wonder that Simpson should express his opinion that some of the cases of protracted gestation lately recorded, particularly "by our American brethren," exceeded the bounds of possibility. Such was also Murphy's estimate of them, until he met with the case in 1862, already mentioned, which appears to have put an end to his incredulity.

It is a circumstance deserving of attention, that in many of the recorded cases of protracted utero-gestation, signs of labour pains, &c., set in about the time of completion of the normal term of pregnancy. In several of the cases I have referred to, as well as in my own, this was observable. It was also noticed in an interesting case of protracted gestation, related by Dr. Tanner, in his work on *The Signs and Diseases of Pregnancy*, in which labour pains occurred on the 275th day from the last coitus, but ceased in a few hours, and did not return till the following day; again they ceased for twenty-four hours, and again returned; this happened daily for three weeks, when she gave birth to a female child, remarkable for its size, twenty-two days after the first occurrence of uterine pains, and 297 from the last intercourse. It was doubtless from observing this circumstance, that Dr. Jörg, of Leipzig, was led to believe that all cases of pregnancy exceeding 280 days, are merely instances of protracted labour. Jörg refuses to allow the period of gestation to exceed 280 days from the time of conception, and considers all cases of protracted gestation, as cases of "protracted parturition." The same idea would appear to have suggested itself to Denman, for he says:—"At the expiration of forty weeks the process of labour commenceth, unless it be hastened or *retarded* by some particular circumstance." Casper alone appears to have given to the occurrence of labour-pains, &c., at the normal end of pregnancy, its proper value as a proof of protracted gestation; furnishing, according to him, one of the three scientific points of any value in the diagnosis of disputed cases, the other two being the removal of all doubts as to the procreative capacity of the alleged father at the alleged time of conception, and the individual menstrual period of the mother.

A very unnecessary degree of importance has, I think, been attached to the degree of development presented by the child at birth, as probative of prolonged pregnancy. Dr. J. Matthews Duncan, for instance, says that the absence of extraordinary intra-uterine

development is a strong evidence against the reality of so-called cases of prolonged pregnancy. On the other hand, he considers its presence as "powerfully corroborative," of protraction in any individual case.

Dr. Duncan tells us that he has excluded two cases of supposed protracted gestation from the category of such cases, because the infants born were not at all larger than the former children of the same parents, who were born at the usual time. Such an opinion is at variance with nearly all experience. The over-maturity of the fetus is, according to Casper, a most variable idea, and only possessed of a negative value. If a child were "so very small that the mother did not know that her labour was over," it would be certain that it could not be the product of a protracted gestation. Doubtless there are various rates of intra-uterine growth, one fetus more slowly attaining maturity than another, just as one child attains manhood more slowly than another. In Casper's work on Forensic Medicine we find the details of the weights and measurements of 247 *mature* new-born children, which show that while the average weight of all the children was a fraction over seven pounds, there was a range of five pounds and a quarter, the maximum weight attained being ten pounds, and the minimum only four and a half; the measurements exhibited a range of six inches in the length. It is curious that the minimum weight as well as the minimum length was found in a boy. In a series of 391 children, born at the normal time, tabulated by Dr. Guy, in his book already referred to, it appears that the maximum weight was fourteen pounds, and the minimum, two pounds six ounces, while the mean weight was six pounds eight ounces, showing a range of eleven pounds and a half. Of 181 children, all of whom had reached the full time, as given by Dr. Guy, the average length was nineteen inches and a half, but there was a range of more than seven. In the obstetric institution in this city, of which I have charge, Julia Wale, a married woman, aged twenty years, recently gave birth to a well-developed child, fully as large as any fetus of eight months that I have seen, and yet, according to her account, it could not have been more than six months and a half, for this woman regularly menstruated till March, the catamenia appearing on the 10th, and ceasing on the 14th, of that month. Her child was born on the 2nd of October, 202 days after the last appearance of the menses. It only survived seven hours. Such facts as these show us what little dependence is to be placed on the degree of development of the child, either as favouring or opposing the belief in protracted gestation. Experience appears to

confirm what we would *à priori* expect, that it is for the sake of children whose *intra-uterine* development has been tardy that nature sometimes detains them in the womb until sufficiently matured to bear their extrusion from it with safety. Viewed in this light the occasional addition of a few weeks to the average duration of pregnancy appears not to be so very wonderful after all.

Nothing satisfactory, however, is known, or probably ever shall be, why utero-gestation is, in some rare cases, protracted beyond the natural, or, to speak more accurately, the average period, for the natural period has not yet been ascertained. Sir James Simpson has suggested the possibility of protracted mental agitation and anxiety producing this effect; and, in one of his cases, the lady whose pregnancy was protracted had endured much mental agitation owing to a steamer, in which she was a passenger, taking fire at sea; for seventeen hours she was exposed in an open boat, with but little clothing, and immersed in water. Mental anxiety was considered, by Mr. Annan, to have been the cause of the protraction in two of his cases. In my case, too, there was a good deal of psychical disturbance during the whole period of her pregnancy. But how many women suffer similarly, and yet protraction of that condition is not the result, premature labour being more commonly brought on by such influences.

The alleged importance of allowing for the time that may possibly elapse between insemination and conception, in calculating the duration of pregnancy, does not merit discussion. This interval was considered by Bischoff, reasoning by analogy from observations and experiments on some of the lower animals, to be about eight or ten days. Whatever physiological interest may attach to this question it possesses no practical or forensic importance. Pregnancy has been, and ever will be, reckoned from the last fruitful intercourse, when this can be ascertained with certainty. In the human female the length of time that may elapse between insemination and the fertilization of the ovum, is probably a variable one, and must ever remain a mystery, and, therefore, practically of no account.

In almost every class of mammals, in which accurate observations have been made for a sufficient length of time, the period of gestation has been found to fluctuate within limits as wide as those which have been observed in woman—either falling short of, or exceeding, the average duration. In the cow, the mammal most nearly approaching the human female in this respect, Baron Tessier found

it to vary from 260 to 321 days, showing a range of 61. Lord Spencer, whose observations were on a more extensive scale than Tessier's, found a still larger variation in the same animal, viz., from 220 to 313 days, the difference being as much as 93 days. Tessier found the duration of gestation in the mare, whose average period is believed to be about 330 days, to fluctuate between 290 and 419 days, the difference being 129; and these results have been confirmed by late observers. In the sheep, whose normal period is about 153 days, it has been found protracted to 157. In rabbits, whose period is 30 days, a protraction to 35 has been observed. In the sow, gestation has been found to vary in duration from 104 to 127 days. Similar variations are found in the period of incubation in birds, although the analogy between incubation and human gestation is less obvious than is that between the latter and gestation in the mammalia. Every one knows that a difference of three or even four days may exist in the time required by different eggs in the same clutch to bring the chicks to maturity. Although these facts have not been disputed there has yet been an unwillingness to admit the full force of the analogy borne by them to the protraction of human gestation. Dr. J. M. Duncan thinks this reasoning from analogy much over-stretched, and tells us that there are evident reasons for expecting that the period of gestation in woman should be limited on the side of protraction rather than in the lower animals. That he should so think is not surprising when he lays down the following dictum:—"That while absolute proof of the prolongation of real pregnancy beyond its usual limits is still deficient, yet that there is evidence to establish the probability that it may be protracted beyond such limits to the extent of three or even four weeks." These limits are, according to him, 275 days, minus the interval between insemination and conception.—*Vide Edinburgh Monthly Journal*, 1854.

Perhaps, after all, the ancients entertained a more correct opinion regarding the duration of gestation than modern physicians have done. Aristotle thought that there was good reason to believe that in the lower animals the period of gestation, generation, &c., were arranged in cycles, but that in mankind alone the period of gestation was subject to great irregularity. Pliny has given expression to a somewhat similar opinion, viz., that in all other animals there are stated seasons for reproduction, and periods of gestation; in man alone they are undetermined; gestation, he thought, lasted from seven to eleven months (lunar). To me it

certainly appears strange that the human female, exposed as she is to so many disturbing influences, psychical and moral, exciting and depressing, should alone be considered subject to a law of constancy in the period of gestation.

The case which I have now communicated is indebted for its chief value to the fact that I was cognizant of all the signs and symptoms of the gestation, so remarkably prolonged, *as they occurred*. This being so, I have thought it right to make it known, as there still continues to exist extensively among medical men an incredulity (unreasonable in my opinion) with regard to protracted gestation. The progress of medical science appears to be retarded as much by over-scepticism as it is by over-credulity. If it be true that utero-gestation may be in *rare instances* prolonged beyond its average duration, as my case goes a far way to prove, no harm can result from the admission of such an occasional occurrence. It appears to me to be the more necessary that every carefully observed case of protracted pregnancy should be placed on record, when we find Dr. Duncan propounding the dogma quoted above; and, more recently still, Dr. Tanner asserting that "all recorded experience of any real value, and all experiments upon animals, teach us that it is in the highest degree improbable that utero-gestation in the human subject has ever been prolonged beyond ten calendar months." Casper allows a greater latitude in the dogmata given by him, as sufficient for our guidance, as we would naturally expect, from his more extensive special knowledge and practical experience; these dogmata are:—"1. The usual duration of pregnancy is from 275 to 280 days. 2. Pregnancy may, however, indubitably be protracted beyond this, and that *even as far as the 300th day*. 3. Cases in which pregnancy is alleged to have been *protracted considerably beyond this, even to the eleventh, twelfth, and thirteenth month, have never been determined by accurate observations;* and allegations of this kind, in any individual case, are, therefore, completely *inadmissible*."

I shall conclude these remarks by quoting a passage from Sir Henry Holland's *Medical Notes and Reflections*, which appears to be peculiarly relevant to the subject:—"In questions of medical evidence there may be an excess of scepticism as well as of credulity. Sometimes this occurs in effect of a temperament of mind (not uncommon among thinking men) naturally disposed to see all things under doubt and distrust. There are other cases, where the same feeling, not originally present, grows upon the mind of

physicians who have been too deeply immersed in the details of practice. . . From conscience as well as convenience, they come to confine themselves to what is safe, or absolutely necessary; and thus is engendered, by degrees, a distrust of all that lies beyond this limit."

NOTE.—This Paper was originally read at a meeting of the Bombay Medical and Physical Society, in November, 1865. A few verbal corrections and alterations have merely been made before transmitting it for publication.

ART. XIII.—*Flax Mills—their Machinery; Accidents Occurring Therein, with Suggestions for their Prevention.* By THOMAS H. BABINGTON, M.D.; T.C.D.; M.R.I.A.; Surgeon to County Londonderry Infirmary.

THE above may be considered an extraordinary text on which to ground a communication to a medical and surgical journal. The subject is one of importance. It, in my opinion, demands the attention of the public at large, as ratepayers, and of the Legislature; and I trust my brethren in the profession will concur with me in thinking that I am not out of place in asking them to consider the subject for a short space.

I have lived, during my professional life (commenced in 1835), in the flax-growing province of Ulster; first, in County Donegal, medical officer of a large dispensary district; afterwards at Portstewart, County Derry; then, for thirteen years, medical officer of Coleraine Union Workhouse; and for twelve years surgeon to the County Londonderry Infirmary. In each year I have had under my care many cases of accidents from flax mills, of greater or less magnitude. In some cases one or two fingers have been lost; in others a whole hand, often a whole limb, sacrificed; and, occasionally, life lost by the frightful injuries inflicted.

Flax, when pulled from the earth, is steeped for a certain time, then spread on grass lands and dried in the sun; afterwards dried in kilns constructed for the purpose; then bruised, and carried to the mills ("*scutch mills*," as they were formerly called), there to be scutched or cleaned. And here begins the danger to lives and limbs.

In order to have the flax properly scutched or cleaned—that is, to have all extraneous substances removed, nothing to be left but

the fibrous texture to be afterwards spun and woven—it is first submitted to a process of bruising, or trituration, by passing it through grooved metal rollers, similar to the rollers of a threshing machine. When sufficiently crushed and softened, it is submitted to the action of the "fliers" or "wipers," which are sharp knife-like boards, set upon a spindle, and driven, as are the rollers, with great rapidity, either by water power or steam. This last process separates the "shows," as they are called, and leaves the flax clean.

In each of these parts of the manufacture of the staple commodity of Ulster accidents frequently occur; and in each succeeding flax season we can scarcely take up any newspaper published in Ulster, from September to March, without finding a record of a case or cases of accidents at flax mills, some attended with loss of life, others with the loss of an arm, fore-arm, or hand, many with the loss of fingers; all the sufferers more or less injured, maimed, or mutilated, and left comparatively useless for the rest of their lives, too often to be supported, with their young families, by the poor rates, or frequently having their own laudable exertions for self support aided and supplemented by their kind neighbours.

The most serious form of accident we meet with is occasioned by the rolling machinery. These are grooved cylinders, and frequently a portion of flax sticks in them, or goes in crooked. The machinery is working with great rapidity, and the attendant, who is "feeding" the rollers, eager and anxious, makes a snap at the flax to pluck it out. Either a finger, the cuff of a coat, the sleeve of a shirt, or a portion of a female's dress (for women are constantly employed at these mills), is caught, the whole hand and arm is dragged or sucked in, and the whole limb smashed and mutilated before the machinery can be stopped. It has happened that the arm has been torn off from the shoulder!!!

The other form of accident is from the "fliers," "wipers," or scutching apparatus. Although these "wipers," or knife-like boards, are sheathed, and work in sheaths, still if the workman, or "scutcher," is not particularly attentive, he may place his hand, holding the "stricks" of flax, too close to, or rather in front of, the "wiper," and will receive a most severe blow, sometimes severing a finger or two from his hand, always inflicting a severe compound fracture, extending through one, two, or three fingers or metacarpal bones.

From the very large number of cases which have come under my own personal observation I have selected twenty, the heads of

which I annex, as an illustration of the statements I have made, that these flax-mill accidents are attended with frightful consequences—maiming, mutilation, permanent disablement, and even loss of life.

No. 1. W. B., aged twenty-four.—Left arm comminuted, contused, lacerated, elbow joint opened, lower extremity of humerus fractured. The fingers were caught in the rollers in an attempt to disentangle a portion of flax, the whole arm was dragged into the machinery, and was frightfully crushed and lacerated. Amputation four inches below shoulder-joint. Recovered.

No. 2. J. M.—Ulcerated stump, following amputation of right arm for injuries of a similar nature.

No. 3. J. M. H., aged forty.—Right hand lacerated, fractured; wrist-joint laid open, ends of radius and ulna fractured. An attempt was made to save the hand; gangrene set in, amputation of fore-arm above the line of demarcation, on the seventh day after the accident. Tetanus set in on fifth day after the operation, and the twelfth from occurrence of the accident. Died on the fourteenth day from the commencement of tetanic symptoms.

No. 4. John Dinsmore.—Entangled in rollers, caught by sleeve of his coat, whole hand and arm dragged in, all the bones fractured, and muscles lacerated, except the deltoid; axillary cavity laid open. Amputation at shoulder-joint. Recovered.

No. 5. Mary M'Neill, aged forty.—Attending the rollers, her fingers were caught and dragged in, all the fingers of right hand were crushed off; the machinery was working slowly, and she dragged her hand out, and actually pulled the median nerve almost from the root; several inches of it were hanging out of the wound. Tetanus set in on the eighth day after the accident, and she died on the seventh day, fifteen days from the occurrence of the injury.

No. 6. J. M. G., aged fifty.—Compound fracture of three metacarpal bones from a blow of the "wiper," or scutching apparatus. Made a good recovery, but was under treatment from 15th January to 4th May.

No. 7. J. S., aged thirty.—Similar accident to No. 6. Good recovery, after three months' treatment.

No. 8. J. P., aged seventeen.—Lacerated wounds of fore-arm, no fracture. Recovery after two months' treatment.

No. 9. J. L., aged fifteen.—Compound and comminuted fracture of fore-arm and humerus, dragged into the rollers. Arm amputated. Recovery.

No. 10. G. W., aged forty.—Compound fracture of first and second fingers of right hand from a blow of the wipers. Recovery.

No. 11. Sarah M., aged twenty-six.—Caught in the rollers. Compound fracture of thumb and fore-finger of right hand; both amputated. Recovered.

No. 12. Pat. M'Fadden, aged twelve.—Compound fracture of three fingers; one amputated. Recovered.

No 13. Hugh M'E., aged twenty-one.—Fractured fingers and lacerated hand. Recovered.

No. 14. J. G., aged twelve.—Lacerated and fractured fingers. Recovered.

No. 15. J. M'M., aged thirty-five. Fractured and lacerated hand; one finger amputated. Recovered.

No. 16. J. C., aged twenty-four.—Fractured fingers. Recovered.

No. 17. John C., aged thirty.—Compound and comminuted fracture of forearm, elbow-joint, and humerus crushed in the rollers; arm amputated. Recovered.

No. 18. James Corry, aged twenty-six —Similar injuries as No. 17; arm amputated. Recovered.

No. 19. Ellen Logue, aged eighteen.—Dress caught in the rollers; arm dragged in, crushed, fractured, lacerations, reached close to shoulder-joint; the head of the humerus was split; amputation at shoulder-joint. Died on fourth day.

No. 20. James D., aged seventy-six, a thin, spare, weakly man.—Whole arm crushed in the rollers; amputation close to shoulder-joint, three hours after. Died from exhaustion on the second day after the operation.

The foregoing selection of only twenty cases from the many I could enumerate is sufficient to arrest our attention. Two amputations at the shoulder-joint, five amputations of arm, two cases of tetanus following the injuries; and the remainder—fractures and lacerations of hands or fingers—frequently requiring partial amputations; and all giving rise to much suffering, and long, painful, anxious, surgical care, treatment, attendance, and supervision.

I have now, in conclusion, to offer a few brief suggestions in order to prevent these accidents, and for the protection of the workers at flax mills.

1. That all flax mills be registered.

2. That the machinery be so enclosed as to prevent the possibility of the fingers, hands, or clothes of the workers being caught or entangled therein.

3. That the mills and machinery be regularly inspected by some competent authority, to see that the machinery is properly enclosed and protected; and that if any owner of a flax mill be found working without being registered, and the machinery certified as being fitly and properly protected, that he be subject to heavy penalties, and liable to pecuniary damages, should any accident occur from his neglect.

4. That all scutchers be paid proper daily wages, and not by the quantity cleaned, as by the cwt. or stone, as their eagerness to earn large wages makes them reckless and hastily careless.

5. That no public-house for the sale of spirits be allowed to exist within a mile of a flax mill, and that a severe penalty be imposed on any person bringing intoxicating liquors to a flax mill. Intemperance and drinking are most frequent about these mills, and lead to carelessness, indifference, and accidents.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Contributions to Medicine and Midwifery. By THOMAS EDWARD BEATTY, M.D.; M.R.I.A.; M.D., T.C.D., Hon. Causa. Dublin: Fannin & Co.

THIS volume is a collection of the principal papers contributed by Dr. Beatty to this Journal, with some others that were published in the pages of our contemporary, *The Dublin Medical Press*, and some more elaborate essays written for *The Cyclopædia of Practical Medicine*. These papers illustrate the history of some of the most important questions in medicine, and serve to show the means by which their author has arrived at the eminence he has attained, an eminence that has enabled him to say in his preface, with no less truth than justifiable pride, that it cannot be laid to his charge that in republishing these contributions he has adopted this method of bringing himself before his professional brethren, with a view to future reward or promotion; for their unbounded favours have left him nothing more to wish for, or to which he could aspire. "The many evidences of the esteem of my brethren in both branches of our profession, with which I have been honoured, might," he says, "well satisfy the most soaring ambition, and afford grounds for the deepest thankfulness, which I now desire to express; and again I repeat that my cup of professional honours is full, even to overflowing."

Success, such as is here pictured, and evidenced not alone by the public demand for his services, but by the honours heaped on him by his professional brethren, stimulates an inquirer to ask—on what does it depend? In this volume we have the answer. Here we have indisputable proofs of zeal, of untiring industry, of ability, and of that power of observation and reflection which can alone make experience valuable. When to these we add the happy personal and bright social qualities that in so remarkable a degree characterize the author of these "Contributions," we at once see how it was that his brilliant success has been obtained. But important as social and

personal character may be, it is only where they serve to adorn a life of earnest real labour, that they ensure success; and valuable as these essays are in a scientific point of view, they are, we conceive, still more so as indicating "footprints" that should stimulate us "to act that each to-morrow may find us further than to-day"—and as showing that if we would emulate the success of their distinguished author, we must, like him, be "still achieving, still pursuing."

The volume contains twenty-three chapters, the first and second of which consist of papers by Dr. Beatty's father, the late Dr. John Beatty. One "On the use of Instruments in Cases of Difficult Labour," and the other "On a Species of Premature Labour to which Pregnant Women are Not Unfrequently Liable." This latter is the paper in which Dr. Beatty established the doctrine now universally held as to the influence of constitutional syphilis in the parents in causing the death of the fetus in utero. The chapter on the use of instruments is a paper read by Dr. John Beatty before the College of Physicians, in 1829, at a time when the leaders of the Dublin school of midwifery had almost entirely banished from practice the use of the midwifery forceps. The subject so ably opened by his father is advocated by Dr. Beatty himself in the two following chapters—one being a "Report of the South-eastern Lying-in Hospital," an institution established by himself; and the other a paper originally read before the Dublin Obstetrical Society, and published in the twenty-first volume of the first series of this Journal, entitled "Cases Illustrative of the Use of the Forceps." To these papers the Dublin school is mainly indebted for the great revolution it has undergone with reference to the use of the forceps. The extent of this revolution may be judged of, when we state that when Dr. Beatty read the account of his cases illustrating the use of the forceps at the Obstetrical Society, the gentleman who occupied the chair, who had been master of the Lying-in Hospital, and who, for forty years enjoyed one of the largest practices in this city, declared he had *once tried* the forceps and failed; and that during Dr. Clarke's mastership of the same hospital the forceps was used but once in 728 cases; whereas, it appears from the last published report of the hospital that Dr. Shekleton used it once in every 67 cases, and we have reason to believe that it is now used still more frequently with the effect of diminishing, in a most gratifying manner, both the maternal and infantile mortality of the hospital. Dr. Beatty may well feel proud of the part he bore

in this movement, and both his own papers and those of his father are worthy of most careful study as models of argument, and as illustrating the history of the Dublin school in reference to the forceps.

Chapters V. and VI. treat of the means of preventing uterine hemorrhage after delivery, of the influence of ergot of rye on the fetus in utero, and of the use of chloroform. From an early period Dr. Beatty has advocated the use of ergot of rye as a means of stimulating uterine action, of preventing hemorrhage, and of neutralizing the retarding influence produced by chloroform on the uterine contractions. With regard to the injurious effect of ergot on the fetus, Dr. Beatty attributes it chiefly to a poisonous influence consequent on absorption of the medicine, which he is led to believe does not take place under two hours. Our own experience does not allow of our adopting this view; as, though it may be true, as Dr. Beatty argues, that after a certain length of time ergot may produce a poisonous influence on the child; we believe the greater danger arises from the obstruction to the circulation through the placenta caused by the almost continuous uterine contraction it frequently produces. For this reason we do not ourselves use the ergot to stimulate a torpid uterus, as we think the forceps a much safer means of expediting delivery; and as the conditions that should be present to justify the use of ergot will permit of the safe use of the forceps, we prefer this instrument. But it is chiefly as means of preventing uterine hemorrhage that Dr. Beatty dwells on the use of ergot in these chapters; for this purpose he administers the ergot either after the head has been expelled, or when it is just about to be so. At this period the child cannot suffer any injury, and the influence of the ergot is most beneficial. With regard to chloroform, Dr. Beatty is a warm advocate for its use. For administering it he employs an inhaler, made by Coxeter, by means of which the dose and the degree of its dilution by atmospheric air can be regulated. He makes the patient hold the instrument in her own hand, so that as insensibility approaches the muscles relax, and allow the hand holding the inhaler to fall away from the mouth and put a stop to the administration of the drug. As we have already intimated, Dr. Beatty often gives a dose of ergot before beginning with the chloroform. We have no doubt many of our readers are familiar with the following description of a chloroform case; but even so, they will, we are sure, be glad to meet such a graphic description again:—

"The course of a labour treated with chloroform is usually as follows. Take, for instance, a first case, in which labour has been going on for eight, ten, or twelve hours, with that increasing amount of suffering which all females experience until the os uteri is nearly dilated. At this time we know that the pains usually become most severe; and the patients lose their self-control, becoming uneasy, impatient, and loudly complaining of the sufferings which they undergo. If, under these circumstances, we now commence the judicious use of chloroform, the first effect, after a few inhalations, will be calmness. Instead of tossing about in the bed, the patient becomes perfectly quiet, she experiences relief, and the friends who are standing around begin to be astonished at the almost instantaneous effect which has been produced. They had become anxious at the amount of suffering she seemed to be undergoing, and are now surprised at the calmness which has been brought about through the assistance of chloroform. I would say that in eight cases out of ten the patients express the most exalted kind of satisfaction at the relief thus obtained. They sometimes say, "Oh! this is so delightful, so pleasant!" In fact, a feeling of inexpressible happiness is produced in most patients by inhaling the chloroform, for perhaps two or three minutes, in the way I will presently mention. I have seen a woman who had been tossing about in her bed, perfectly uncontrollable (because to a certain extent delirious, as such patients often are) lie calmly and quietly down, without any stage of excitement, and remain so for the space of four or five hours, without for one instant losing her consciousness or self-control, or making loud exclamations, or removing herself from the position in which she had been directed to remain.

"The next effect which is produced by the judicious administration of chloroform is the total disappearance of that horrible aching in the back, of which patients complain in the intervals of the pains, and which makes them call on the nurse in attendance not to relax the pressure on the back which it is usual on such occasions to make. This intolerable ache is never felt after the administration of chloroform has begun; so long as it is kept up, the distress is done away with. After some time the patient will call out loudly for more chloroform, feeling the benefit which she has derived from its previous administration. We accordingly let her have a little more, and by degrees, as she becomes conscious of the approach of the pains, she takes the medicine again, and in this way passes hours without suffering. Some patients will sleep in the intervals of the pains. We know how valuable such natural rest is during labour; and I have observed that the administration of chloroform does not in the least degree interfere with it; on the contrary, it rather helps to produce natural sleep, when not pressed to the extent of sopor or insensibility. As the time of delivery approaches, the amount of chloroform should be rather increased, because the patients suffer more at this

time than at any other previous stage of their labour; and it will require a larger quantity for the purpose of alleviating pain, though not enough to produce the full effect which is produced in surgical practice. In fact, I can testify most distinctly that in no case will it be necessary to produce sopor or stertorous breathing in the course of the labour; and it is worthy of remark that the patients, when the labour is over, will tell you that they knew they had the pains, but did not feel them.

Chapter VII. is on purulent effusions into the joints, &c., in puerperal women; and in Chapter VIII. we have an account of a most remarkable case of pregnancy, complicated with a tumour occupying nearly the entire pelvis. In this case it was feared delivery could only be accomplished by the Cesarean section; but as labour set in the tumour was gradually pushed aside so as to allow of the child, which presented with the breech, being born *per vias naturales;* and the patient made a good recovery, from which Dr. Beatty says, "we may draw a useful conclusion with respect to the danger of deciding too quickly upon the impossibility of delivery being accomplished through the natural passages, and the necessity for performing Cesarean section."

Chapter IX., which is illustrated by a most beautiful coloured drawing is on a rare and hitherto unnoticed form of death in cancer of the uterus. In cases of cancer of the uterus the ordinary causes of death are, Dr. Beatty says, irritative fever, hemorrhage, exhaustion, or peritonitis; but in three instances that came under his notice death occurred in another form, viz., by uremia, in consequence of the cancerous deposit extending to the bladder and blocking up the ureters, so as to prevent the escape of urine; this causes the ureters and pelves of the kidneys to be enormously over-distended, till at length no further secretion can take place, and the blood becoming poisoned, the patient dies comatose and convulsed.

Chapter X. is on cases of retroflexion of the uterus successfully treated. Chapter XI. is on a remarkable case of calculus in the female bladder; and Chapter XII. on inversion of the urinary bladder through the urethra with large prolapsus of the rectum in a female child. We regret that the space at our disposal will not permit of our noticing these essays at length; but we pass them the more readily as it is not very long since they appeared in full in our pages.

Chapters XII. and XIV. we associate, as showing that, important as Dr. Beatty's communications have been in reference to midwifery, he has been an attentive student of all the phenomena of disease, and not a mere specialist. In the first of these chapters we have a brief record of some cases in which a *frottement* was observed in inflammation of the peritoneum, a subject afterwards taken up and dwelt upon by Dr. Bright; and in Chapter XIV. we have an account of the case of aneurism of the abdominal aorta, with the dissection and observations, first published in 1830, and from the publication of which, as Dr. Stokes has stated, in his book on *Diseases of the Heart and Aorta*—"our knowledge of the diagnosis of this disease may be safely said to date."

The four chapters that follow are reprinted from the *Cyclopædia of Practical Medicine*, and like those we have just noticed, show the extensive range of subjects embraced in Dr. Beatty's contributions. They are on impotence, rape, doubtful sex, and persons found dead.

We have next a chapter on the operation for the cure of dysmenorrhea—"A mode of treatment that (Dr. Beatty thinks) has not been as fully appreciated as its merits demand." In performing the operation he still uses the large three-bladed speculum, and Sir James Simpson's one-bladed hysterotome.

The following chapter treats of "Plastic Operations on the Female Genito-Urinary Organs," and describes operations performed in cases of vesico-vaginal fistula, and of prolapse of the uterus; and then the volume closes with three addresses, two of them delivered at the opening of the seventh and twenty-fifth sessions of the Dublin Obstetrical Society, and the other at the opening of the Winter session at the City of Dublin Hospital, on the 6th of November, 1865.

The original publication of the papers we have thus briefly noticed took place at intervals from the year 1830, when the memoir on aneurism of the aorta first appeared, till the present year. They have done good service in their day, and in their present form will do still more; and we are sure our readers will join with us in the sincere wish that our pages may long continue to be enriched by occasional contributions from the pen of their distinguished author.

RECENT WORKS ON CHOLERA.

1. *The Antidotal Treatment of the Epidemic Cholera.* By JOHN PARKIN, M.D. Third Edition. 8vo. Pp. 321 London: John Churchill and Sons. 1866.

2. *The Nature of Cholera, as a Guide to Treatment.* By WILLIAM SEDGWICK, M.R.C.S., &c. New Issue. Post 8vo. Pp. 200. London: Walton and Maberly. 1866.

3. *On Cholera, its Nature and Treatment; being the Debate in the Harveian Medical Society of London.* Edited by Dr. C. DRYSDALE. Pp. 34. London: Robert Hardwicke. 1866.

4. *Cholera; A New Theory.* By C. DUDLEY KINGSFORD, M.D. Pp. 16. London: John Churchill and Sons. 1866.

5. *Brief Remarks on Cholera.* By ROBBERT J. SPITTA, M.D., Lond. Pp. 15. London: John Churchill and Sons. 1866.

6. *On the Treatment of Asiatic Cholera.* By ARCHIBALD BILLING, M.D., A.M., F.R.S. New Edition, Revised. Pp. 14. London: John Churchill and Sons. 1866.

7. *Mechanical Treatment of Cholera.* By A PHYSICIAN. Pp. 11. London: John Churchill and Sons. 1866.

8. *The Human Blight and Cattle Blight.* Pp. 30. London: Longmans, Green, and Co. 1866.

9. *On Epidemic Diarrhœa and Cholera, their Nature and Treatment.* By GEORGE JOHNSON, M.D., Lond. Pp. 32. London: Robert Hardwicke. 1866.

10. *The Arrest and Prevention of Cholera.* By ARTHUR ERNEST SANSOM, M.B., Lond. Pp. 131. London: John Churchill and Sons. 1866.

IN the last number of this Journal we reviewed some works on cholera, and drew attention to those facts in connexion with the progress of previous epidemics which we considered of practical importance. Then we were only threatened by the disease, now it has established itself in our city; we have reason to believe that

reports of the utmost value, at least as regards the elucidation of the laws in accordance with which cholera is diffused, will, at the termination of the visitation, be issued under the direction of the official guardians of public health; and we also look forward to the publication of reports on the clinical and pathological features of the disease by some of our hospital physicians, who have carefully watched the symptoms and morbid appearances; till we are in possession of these we think it better to say little of the present outburst. A few things, however, confirmatory of our previously expressed conclusions may be briefly alluded to. The circumstances under which the disease appeared in Dublin were such as to produce in most minds, we think, a clear conviction that to human intercourse is due its transmission from city to city; moreover the frequency with which several members of a family were attacked when living in filthy and ill-ventilated rooms, taken in connexion with the small number of nurses and other hospital servants who have suffered, shows that whatever the specific poison may be it is very largely dependent for its vigorous propagation on such favouring circumstances as want of cleanliness in habitation and person, overcrowding, and contamination of the air with fecal matters. In London, according to the reports of several medical officers, districts which in previous epidemics afforded a frightful mortality, but which have since undergone improvement in ventilation and sewerage, have either altogether escaped or had but few cases; when the epidemic commenced there, it was co-extensive with a certain water supply, to a degree which justified the suspicion that if the actual germs of the disease were not conveyed in the water, at least its impurity must have produced in the systems of those who drank it a greatly increased tendency to receive and develop them; we therefore repeat our advice as to fresh air, the boiling and filtering of water through animal charcoal, the flushing of drains, the use of disinfectants, and the washing of the hands and mouths of those who are in actual contact with the sick, before they eat; but if such precautions are taken we do not think that those about the sick are exposed to any particular risk, if they be at the time in good health themselves; this we think is important; among the poor living in places in the last degree unfavourable to health, and perhaps debilitated by want of food, and sometimes by excesses, the onset of the disease has frequently been sudden; but in all the cases in private, of which we have ourselves heard, a neglected diarrhea had gone on, in some cases for days, before the characteristic choleraic

symptoms were manifested; one member of our own profession has, we regret to say, been among the victims; but it was clearly ascertained that he had not been in attendance on any case of the disease. The notion that a peculiar atmospheric condition may be the efficient cause of the disease is still, we understand, entertained by some, but certainly our experience of this outburst is not favourable to such an opinion; the wind was high, and from all quarters, the rain-fall was almost continuous, and the temperature was not unusually high during the earlier weeks; on the other hand, however, we think the influence of calm still air, with mists, and a rather elevated temperature, in increasing the rapidity of the spread of cholera, was apparent here. On all such matters, however, we confidently expect more definite information from the reliable sources we have already indicated. Regarding the treatment of the disease we see no reason to change the opinion expressed in our last Number; the Condy's fluid to which, on the faith of some reports in the *Madras Medical Journal*, we drew attention, received a trial at the hands of Dr. Hudson, who had charge of the cholera wards in the Meath Hospital; the impression left on his mind was that it exerted no influence over the disease, and after trial by an observer so accurate and accomplished we would hardly suggest its further employment.

In the mean time, however, many new works have appeared, some of them indeed of a style which show that their authors are very far from being fitted to handle so difficult a subject—but still, a few of them at least, are well deserving of attentive perusal.

Dr. Parkin believes that charcoal and carbonic acid are direct chemical antidotes for the poison which causes the symptoms of cholera. He recommends thirty grains of the bicarbonate of soda or potash, dissolved in a wineglassful of water, in which a dessert spoonful of syrup has been stirred, the more effectually by its viscidity to entangle the gas, to be made effervescent by twenty grains of citric or tartaric acid dissolved in half a wineglassful of water—the draft to be taken immediately; or, if more agreeable to the patient, the solutions may be given separately; when the collapse does not pass off, he sometimes combines with the soda carbonate of ammonia; and if the collapse has come on very suddenly, ether and other anti-spasmodic stimulants may be tried. Sometimes, too, in profound collapse he sanctions the introduction of hot air under the bed clothes Where there is secondary fever and suppression of urine, he seems to think small frequently-repeated doses of

turpentine useful, in addition to the effervescing draughts; the interval between the doses should vary, according to the urgency of the symptoms, from fifteen minutes to two hours, but in no case of pronounced cholera does he allow a greater interval than half an hour to elapse between the doses; he is of opinion that all other measures, even frictions, are useless, and often injurious. Not only does he consider carbonic acid curative, but he maintains that the use, twice daily, of such draughts, or of a teaspoonful of freshly-prepared charcoal, beaten up with an egg, wards off cholera; he does not, however, claim much efficacy for the treatment unless commenced either before or at the beginning of collapse. He supports his views by two kinds of evidence; he endeavours to prove that the success which attended the saline treatment of Dr. Stephens and the calomel treatment of Dr. Ayre in the hands of some physicians, and the want of success which resulted from them in the practice of others, find their explanation in the circumstance that in the successful cases the patients were allowed to have soda water or effervescing draughts at the same time; and he gives us the statistics of the treatment of cholera by his plan in Spain, in 1834, and in Jamaica in 1851-52, together with those of some trials made at St. Bartholomew's Hospital in 1849; according to the Jamaica table the deaths amounted to little more than eleven per cent. If we did not know how often conclusions which had received the support of statistical evidence have been found erroneous, we would be compelled to say that Dr. Parkin has proved the superiority of his treatment; but there are so many ways by which fallacy may creep into statistics that we would value more highly the impression left upon the mind of a single accurate and unbiassed observer who has seen and weighed all the circumstances, than any conclusions merely supported by figures. That Dr. Parkin has been most zealous and conscientious in his investigations we are convinced—that he must firmly believe in a theory for the proving of which he has travelled so far and toiled so laboriously,we are sure—but that he has approached the experimental evidence with a mind unwarped by foregone conclusions, we doubt. The inhabitants of Herefordshire enjoyed a singular immunity from cholera; the men who worked in the Broad-street Brewery during the appalling outbreak around it escaped, because, says Dr. Parkin, both were constantly enjoying the advantages of carbonic acid, the former from their cider and the latter from their beer; but these very examples have been often, and we think more plausibly, quoted to prove not the

prophylactic efficacy of carbonic acid, but the advantage of abstaining from drinking water of doubtful purity during cholera times. Dr. Parkin's views have been before the profession for more than thirty years; and it is to be feared that their adoption in other hands could not have been attended with such signal benefit, or we should have a greater body of British evidence in their favour; nevertheless, seeing how little impression other measures make upon the disease, we feel justified in hoping that they will receive a renewed trial, especially as the effervescing drinks are at least grateful to the patients, and seem good against the vomiting.

We have carefully read Dr. Parkin's book from cover to cover; for if anyone has really anything worth saying about this disease we wish to be able to draw our readers' attention to it; may we venture to suggest to him and to others who write on cholera the importance of being brief; whether a man's views are worth bringing before the public or not must, of course, be left to the sobriety of his own judgment; occasionally, when the very principles by which we should be guided have to be discussed, as was done in Dr. Johnson's work, it may be necessary to show where the reasoning of previous authors was false; even then it should be done, as he did it, briefly; but in other cases, when an author thinks it relevant to the question to demonstrate the inutility of methods of treatment different to his own, he may surely, having proved this as a fact, be content with indicating, in the fewest possible words, his ideas of the fallacy of the principles on which they have been recommended. If any one can show us a mortality of ten, twenty, or even thirty per cent. as the result of his treatment of undoubted cases of cholera at the height of the epidemic, we will listen to him with respect though he do not prepare us by proving both how few actually did recover under other treatments, and how impossible it was that it could be otherwise.

Mr. Sedgwick believes that a morbid impression is made upon the sympathetic system *through the stomach*, or at least through it and the upper portion of the intestinal canal. He calls attention to the similarity that exists between the symptoms in cholera and in conditions which admit of being directly referred to an affection of the sympathetic nervous system produced through the medium of the stomach, such as the shock which follows blows on the epigastrium, or perforation by an ulcer; he then proceeds to analyze four of the principal phenomena of cholera, namely—the suppression of urine, the altered condition of the blood, the flux from the stomach

and bowels, and the failure of the circulation, with the view of showing that these symptoms find a more satisfactory explanation in his theory than in any other. He does not state of what nature he conceives the agent to be which thus impresses the sympathetic, but he considers there is no evidence of the presence of a poison in the blood. The arguments by which he supports his views would not bear condensation, and any examination of them would require at least as much space as they themselves occupy. We recommend all who wish to have a philosophic view of cholera to read Mr. Sedgwick's book; and we strongly urge all who feel tempted to rush into print with some brilliant theory as to its nature, to do the same; they will see that before they are in a position to do so, they should not only have seen the disease, and have ascertained the conditions under which it has appeared in other countries, but they should be as thoroughly acquainted, as in the present state of science is possible, with the functions of the nervous system, with the forces which maintain the circulation of the blood, and with the endowments of the blood itself. There is one characteristic of Mr. Sedgwick's book which we commend to the imitation of all authors, the scrupulous care with which he acknowledges his obligations to those who have preceded him in the same field of inquiry. In the last number of this Journal we ventured to draw back attention to venesection as a measure capable of favourably influencing the course of cholera; it is the remedy on which Mr. Sedgwick would principally rely; he shows the importance which was attached to it in the earlier epidemics, and then sums up his own experience and views regarding it. After narrating a case which was benefited, though not saved, by it, he says:—

"Since the occurrence of this case, which was valuable as a practical illustration of the correctness of the theory that bleeding in cholera is antagonistic to collapse, I have had many opportunities for observing its effect on the disease, and my experience is that in all cases where it can be employed before the collapse has assumed a hopeless character, it is the most important agent we possess, not only for arresting the more urgent symptoms of cholera, but as a necessary introduction to the use of remedies which would be inert without it.

"Bleeding may be considered to have a twofold influence for good over the disease, which is exhibited, first, in its general effect on the circulation, and secondly, in its special effect on individual symptoms. Respecting the first of these effects, it is evident, from the authorities which have been cited in favour of bleeding, that the most marked results

following its successful employment depend on restoration of the circulation. This important fact is fully substantiated by all who have had opportunities for observing the effect of bleeding on the disease; and it is chiefly due to the unloading of the venous system, and the comparative diminution of the red particles of the blood; in consequence of which absorption is quickened, if not even in some cases restored, where such power has been previously suspended or lost. This is the primary indication to be fulfilled in the treatment of the disease; for without the power of absorption, the loss of fluid by the flux from the alimentary canal cannot be supplied by the amount of liquid taken into the stomach, and even medicines in such states of the system are inert; whilst the artificial introduction of saline mixtures into the veins shews that although the physical state of the blood is a great cause of the peculiar cholera symptoms, it is only so secondarily, and that unless the power of absorption is at the same time restored, it is useless to expect that the results obtained by saline injections will be permanent. Hence also it may be urged that whilst the physical change in the condition of the blood is closely connected with cholera collapse, it is probably due quite as much to an excess of the red particles, as it is to a diminution of the watery constituent. Bleeding might therefore be theoretically inferred to be necessary in cholera to produce (1) a diminution of red particles, and (2) an increase of the watery part of the blood. The combined result being that in place of a progressively fatal thickening of the blood, which kills by stoppage of the circulation—either primarily, as in death during collapse, or secondarily, as in death during the consecutive fever, which follows the prolonged arrest of the blood supplied to the alimentary canal—there is substituted a fluid which admits of the organic functions being, for a time at least, restored; for the blood, in becoming more capable of propulsion by a partial abstraction of its red particles, is at the same time rendered more capable of absorption, and by consequent self-dilution more fitted for the maintenance of organic life."

After bleeding in severe cases, and without it in milder ones, he recommends turpentine. He says:—

"The subjoined mixture, occasionally combined with small doses of chloric æther, is that which I have been in the habit of giving in nearly all stages of the disease:

"℞. Olei Terebinth: ʒss
Liquoris Potassæ ʒj
Muc. Acaciæ ʒss
Aquæ Carui ʒvss

"Two tablespoonfuls to be taken every ten or fifteen minutes for the first three or four doses, and subsequently less often."

In Dr. Johnson's pamphlet the indiscriminate administration of castor oil in epidemic diarrhœa is by no means recommended; he points out the impropriety of opiates and astringents while we have reason to think morbid secretions still lie within the bowels; once these have been removed, either by abundant natural motions or by medicine, he gives five or ten drops of laudanum. During the collapse of true cholera, he recommends castor oil only where there is "over-distention of the bowel by liquid, and accumulation and retention of offensive viscid semi-solid secretions." He, too, recommends venesection; where there is rapid breathing, with a feeling of impending suffocation, and a cessation of vomiting and purging; he believes that it affords the only hope of saving life. We do not think that many of the Dublin physicians are actual supporters of the eliminative method; yet we believe the attention which Dr. Johnson drew to it has influenced the treatment of this epidemic; opiates have been given more sparingly, and castor oil, with or without turpentine, has been thought advisable where consecutive fever, with head symptoms, has been united with cessation of purging and suppression of urine. Dr. Johnson lays much stress on the general management of the patient by rest in bed, and the other means to which, in the last number of this Journal, we drew attention.

Dr. Kingsford believes cholera is caused by phosphorus, probably in the form of phosphuretted hydrogen, which in cholera seasons is not neutralized by ozone. As a matter of experience he has found large doses of calomel useful, and this he explains on the supposition that it acts as a chemical antidote.

Cholera, Dr. Billing very dogmatically tells us, is a species of fever, and the remedy is this:—

> "Water, half a pint.
> Tartar emetic, 2 grains.
> Sulphate of magnesia, half an ounce. Mixed.
>
> The dose is, for an adult (from fifteen years upwards), a tablespoonful every half-hour; for a child of a year and a half or two years, a teaspoonful; and for the intermediate years a proportionate dose."

The mechanical treatment of cholera consists in laying the patient on his back on a board, and giving him a rocking movement. We can only say, after the author has tried it, we will be glad to hear the results; but we should be sorry to make the experiment.

The views contained in *The Human Blight and the Cattle Blight*, are merely assumptions without probability, much less proof.

Dr. Sansom recapitulates the facts as to the history of cholera epidemics, and as to the circumstances which influence its diffusion, which are generally accepted; he urges the use of disinfectants, of which he thinks carbolic acid the best. He then gives us his theory of the nature of cholera; he believes "that cholera is the result of a poison which manifests its effects in two different ways, according as it is in immediate relation with the alimentary canal, or absorbed into the circulating blood. As a primary irritant it causes the immediate phenomena of vomiting and purging; as an absorbed poison it compromises the integrity of the great sympathetic nerve, ultimately becomes an irritant thereof, and causes the combined phenomena of true cholera—diarrhea and collapse." He maintains that the condition of the arteries shows that the poison acts on the sympathetic not as a paralyzer but as an irritant, keeping up a tonic spasm of their coats. Carrying his faith in antiseptics into the treatment, he proposes for choleraic diarrhea either sulphite of soda in half drachm doses, every two or three hours, or carbolic acid in two-drop doses, with three drops of chloroform. When collapse comes on, he adds to these means counter-irritation of the epigastrium by carbolic acid; hot enemata, venesection, injections into the veins, and the inhalation of chloroform, with the intention of relieving spasms. To these he adds the usual advice as to nursing. He gives two cases treated by sulphite of soda; in both the result was favourable; but beyond these we gather that, as yet, he is not in a position to recommend his treatment on other than theoretical grounds.

Note-Book of Materia Medica, Pharmacology, and Therapeutics. By R. E. Scoresby-Jackson, M.D., F.R.S.E., Fellow of the Royal College of Physicians; Physician to the Royal Infirmary, and Lecturer on Clinical Medicine; Lecturer on Materia Medica and Therapeutics at Surgeons' Hall; Examiner in Materia Medica and Medical Jurisprudence to the University of St. Andrews, &c. Edinburgh: Maclachlan and Stewart. London: Robert Hardwicke. Dublin: Fannin & Co. 1866. 8vo., pp. 632.

In compiling the work before us, we believe that Dr. Scoresby Jackson has conferred a great benefit, more particularly indeed on the student portion of the medical profession, but to a large extent on practitioners also. That the book is one especially adapted to

the wants of the former class may be anticipated from the fact that it owes its origin to a desire on the part of the author "to relieve the students attending his lectures as much as possible from the irksomeness of note-taking." Within, too, its necessarily moderate limits is contained all the information on the important subject of which it treats which the practising physician can require. And it is in this attempt to meet the wants of all—as well graduates as students—that we feel bound to congratulate Dr. Scoresby-Jackson on his well-merited success.

Former writers on the same subject, in their laudable anxiety to treat as fully as possible of the more important province of Materia Medica, namely, the action and uses of medicines, were too apt, we think, to omit altogether any consideration of what we may call the A B C of the subject. By this we mean the definitions and axioms on which it is grounded; and without a correct knowledge of these it is simply impossible for the pupil to proceed in the study of Materia Medica. Now this want has been fully met in the first division of Dr. Scoresby-Jackson's most useful manual.

The work is divided into three parts. The first of these is essentially introductory, and contains: 1st. All necessary definitions; 2nd. A tabular arrangement of "Officinal Formulæ" under the various headings "Aquæ," "Decocta," "Extracta," "Tincturæ," &c.; and 3rd. A treatise on "Magistral Formulæ or Prescriptions," wherein the author briefly but accurately considers: "1. The meaning of the terms *properties*, *forces*, *actions*, and *effects*, of *medicines;* 2. The *modus operandi* and *classification* of medicines; 3. The *locality* of the action of medicines; 4. The several methods of *applying* medicines to the patient; 5. The *circumstances* which *modify* the actions of medicines; and 6. *the construction of the prescription.*"

In Parts II. and III. we find *inorganic* and *organic* Materia Medica, respectively, dealt with in a manner which leaves nothing to be desired. Under each article we have arranged its mode of preparation, with the *rationale* thereof; its characters, tests, uses, doses, and (in the case of poisons) antidotes. The "Organic Materia Medica" the author tabulates in three divisions according as the substance is derived from the vegetable kingdom, the animal kingdom, or is the product of fermentation, destructive distillation, &c. Products of the vegetable kingdom are ranged under the natural orders, whence they are derived; and the botanical characteristics of the trees or plants yielding them are given, as are also those of the natural orders themselves.

At the end of the book we find the three appendices which occur in the British Pharmacopœia, and under the title of "index," a complete posological table of all substances used as medicines, the officinal being distinguished by an asterisk.

It will thus be seen that every department of the subject is treated of, and—if not entirely exhausted—is not so because the author, as he states in his preface, sends forth his work as a "Note-Book," and its aim he intends to be "suggestive rather than dogmatic."

The volume is of convenient size, the letter-press good and extremely accurate, and we feel we are but doing our duty in sincerely recommending the work to every member of the profession, be he student or physician.

Memoir of Sir Patrick Dun (*Knt.*), *M.D., M.P.; Physician-General to the Army; and Sometime President of the College of Physicians; Including his Will, his Deed for Constituting a Professor of Physic; and other Important Records Concerning the Profession of Physic in Ireland, never before Published.* By T. W. BELCHER, M.D., Dub.; B.M. and M.A., Oxon. and Dublin; Fellow, Censor, Examiner, and Hon. Librarian King and Queen's College of Physicians in Ireland, &c. Second Edition—Revised and Enlarged. Dublin: Hodges, Smith, and Co.

THIS is a second edition of the Memoir of Sir Patrick Dun, that appeared in our last Number, from the pen of Dr. Belcher. It is now published, on the motion of Dr. Stokes and Sir Dominic J. Corrigan, at the request of the College of Physicians, and it has been revised, corrected, and added to by the author, so as to constitute a new edition. The very numerous and interesting facts collected by Dr. Belcher throw a great and unexpected light on the history of the College of Physicians in Ireland, and of physic itself. We congratulate the college on having their early history so fully illustrated, and on having within their ranks one so learned and so industrious as the able and distinguished author of the Memoirs of Dr. Stearne and of Sir Patrick Dun.

1. *A Treatise on the Construction, Proper Use, and Capabilities of Smith, Beck, and Beck's Achromatic Microscope.* By Richard Beck. London: J. V. Voorst. Pp. 144.

2. *Smith, Beck, and Beck's Illustrated Catalogue.*

3. *An Elementary Text-Book of the Microscope; Including a Description of the Methods of Preparing and Mounting Objects, &c.* By J. W. Griffith, M.D., F.L.S., &c.; Member of the Royal College of Physicians; Conjoint Author of the Microscopic Dictionary, &c. With twelve coloured plates, containing 451 figures. London: John Van Voorst, Paternoster row, 1864.

The first of these works is a very perfect and beautifully-illustrated description of the various forms of the achromatic microscope as brought to its present perfection. The term microscope must be taken in its widest sense as including not only the instrument itself, but all the scientific and mechanical apparatus needed for its widest application. We have in these pages clear and succinct descriptions of every kind of microscope from the most elementary to the most complex. The author also displays a just appreciation of the value of many of the more recent additions, such, for example, as Wenham's binocular, which has been at one time lauded as the greatest possible improvement, and again decried as disappointing and incorrect. We shall extract the part referring to this subject as a specimen of the literary merit of the work:—

"Wenham's binocular microscope is now so well known that it may appear hardly necessary to occupy a portion of these pages with any explanation or defence of its principle; but binocular vision itself, as well as this particular application of it, still meets with such strong opposition from many microscopists, that we venture to give with some minuteness a few facts connected with the subject, and, more especially, because we consider Wenham's binocular body to be the most valuable addition to the compound microscope since the perfecting of the object-glasses by Mr. Lister.

"That binocular vision is advantageous, if not necessary, is quite sufficiently proved by the fact of our having two eyes, and it is also known that the stereoscopic effect conveyed to the mind increases as the object approaches the eyes; consequently, when the simple design of the microscope is to enable the eyes to see an object, or the image of an

object, at a shorter distance than the natural limit, under such circumstances stereoscopic vision must be of the greatest importance.

"In Mr. Wenham's contrivance, the binocular body is merely an addition; when adapted to an instrument, it does not interfere in any way with the use of the single body only, in its perfect condition. This is a most important feature; for it also affords the opportunity of an immediate comparison between the appearances seen by single or double vision; and thus not only can the accuracy of the binocular body be easily tested, but the observer may obtain in an instant a double analysis of the structure or condition of an object.

"We believe most of the opponents of the binocular principle to be those observers who have accustomed themselves to the examination of objects as transparent; and we venture to draw especial attention to this particular condition, under which so many judge of the value of the Binocular Microscope. This method of examination, peculiar to the microscope, and one to which the naked eye is quite unaccustomed, conveys to the mind a most imperfect idea of the form or vertical distance of the various parts of an object, whilst in very many instances the appearances bear no resemblance even in shape to the true structure."

In Smith and Beck's Illustrated Catalogue we have the necessary complement to the preceding work. It gives the prices of every variety of instrument from the humble pocket lens and simple dissecting microscope up to the first-class binocular. A perfect marvel of cheapness and efficiency is the little instrument entitled the universal microscope, which, for a sum of five pounds, comprises all that an ordinary student need require. The educational and the popular microscopes are higher varieties, and are really excellent instruments, to which at any time the most expensive object glasses might be applied. Their prices range from £10 to £15, or £20. For the higher classed instruments and the innumerable paraphernalia which necessity or fancy has originated, we must refer to the catalogue, merely stating that any one so disposed can get rid of a couple of hundred pounds with the greatest ease in the process of acquiring them.

The third book on our list is an admirable companion for those who wish to make a pleasant and profitable use of the microscope. The descriptions, whether of the structure of the instrument, the mounting of objects, or their delineation and nature, is simple, and so far as we have been able to test it, accurate. Into the twelve plates are crowded great numbers of objects, drawn with much accuracy and appropriately coloured. Underneath each is given in figures the

amount by which it is magnified in linear diameter. Any student who works through this book will have acquired a very extensive groundwork of microscopic lore on which to build any superstructure of a special nature that he may choose to apply himself to. The objects described and figured through these pages will, by their variety, lead him on to a thorough management of the instrument and knowledge of its powers.

Army Hygiene. By Charles Alexander Gordon, M.D.; C.B.; Deputy-Inspector-General of Hospitals, Army Medical Department; Member of the Sanitary Commission for Bengal; Author of *China, from a Medical Point of View;* &c., &c. 1866. London: John Churchill and Son, New Burlington-street. Calcutta: R. C. Lepage and Co. 1 Vol. Pp. 532.

Dr. Gordon, in his preface, states that "among the numerous works that have of late years treated of hygiene, there are none devoted solely and entirely to the subject as it refers to troops in motion and on service." To supply this deficiency is the object of the work under notice. Without its being considered necessary to repeat what has been said by numerous previous writers on the subject of the soldier's barrack life at home, Dr. Gordon proceeds to say:—

"It is, however, but a very partial view to take of the circumstances of a soldier's life, to consider them as requiring no further measures to maintain him effective, and to provide for his necessities, while suffering from the casualties incidental to his profession, than what are applicable to and sufficient for the conditions of civil life. This will, it is believed, be clearly shown in the present volume; and it will, I trust, be rendered equally apparent, that while to meet these requirements a knowledge of the ordinary subjects that constitute modern hygiene is no less essential to the army medical officer than to the private practitioner—the former in order successfully to provide for, and meet the requirements of armies during times of war, must be endowed with a knowledge of dealing with masses in motion, and power of rapidly devising measures to meet emergencies—as well as a capacity for organization that in the latter are never required."

Dr. Gordon then proceeds to demonstrate how far the duties of the military medical officer in a garrison town in the United

Kingdom are identical with those of the civil practitioner, and continues:—

"It is far otherwise, however, on foreign or on active service; and inasmuch as these constitute what may be looked upon as the normal circumstances of the army, we have a right to assume that all arrangements connected therewith should be established with special reference to them. It is accordingly in such conditions that the degrees of scientific knowledge, readiness of resource, and capabilities of army medical officers manifest themselves, either to the unspeakable benefit of individuals as well as the masses generally; or, it may unfortunately be, to the loss of life of the one, and utter disorganization of the other. Thus, then, while upon the one hand it is the direct interest of the state to obtain for its armies the greatest possible amount of talent, it is no less the imperative duty of young professional men who enter this branch of the public service, sedulously to qualify themselves for the faithful and efficient discharge of the important duties that fall to their share."

Dr. Gordon next alludes to instances "in which the efficiency of an army before the enemy has been maintained solely by the exertions of its medical officers," and states that "throughout the published accounts of the peninsular war the attentive student will not fail to note some in which the decision of a commander to accept or refuse battle was based upon circumstances connected solely with the medical department:—

"It would add needlessly to the length of these remarks were extracts to be given from such accounts. There is one illustration, however, which in duty to the army medical department, it is but right that I should chronicle in a work devoted, as this is intended to be, to aid its officers in their important duties. It is this:—

"Sir James M'Grigor gives a remarkable example of the extent to which an efficient medical staff may conduce to the success of military operations. He states that, 'it was said with much truth by an eminent individual, that he thought the extraordinary exertions of the medical officers of the army might be said to have decided the day at Vittoria; for their exertions had undoubtedly added a full division to the strength of Lord Wellington's army; and without those 4,000 or 5,000 men it is more than doubtful if his lordship, with all his unrivalled talents, could have carried the day.'—*Autobiography*, p. 331."

Dr. Gordon next notices the important services rendered to medical science by military medical officers in times of peace, from

1563, when Thomas Gale, who appears to have been the first systematic British writer on matters connected with military medicine and surgery, treated on gun-shot wounds, down to the present time, showing "that they have not been behind-hand in suggesting those improvements in diagnosis and treatment of disease which have rendered the present state of medical science so greatly in advance of what it was three centuries ago."

A few of the instances of attention to sanitary matters by the older military medical writers, adduced by Dr. Gordon, may be interesting to our readers:—

"Dr. Brocklesby, an army surgeon of eminence, who wrote in 1764, condemned some of the barracks then existing at Chatham as being low and ill ventilated, and describes the hospitals into which sick soldiers were taken as calculated rather to generate than cure diseases. 'These and the barracks,' he says, 'sweep off the men like a perpetual pestilence.'"

When Miss Nightingale made use of somewhat similar language, people in general, and the higher military authorities in particular, were inclined to exclaim, "A Daniel come to judgment," and the administrators of our military system took advantage of the cry, to cover their own delinquencies in having so persistently neglected and set aside numerous warnings from army surgeons of later days, similar to that above quoted, and made her the ostensible originator of all the lately-introduced modifications and improvements in our army hospital system.

Dr. Gordon gives other similar instances which are of considerable general interest during the present revival of attention to sanitary matters. Dr. Nash urges medical officers to "attend to everything which reason and convenience tell them are necessary for the preservation" of the health and lives of soldiers.

"Sir James M'Grigor.—The great administrative talents of the late Sir James M'Grigor are acknowledged, and the great care bestowed by him upon the efficiency of the army is still spoken of with admiration. One of the measures adopted by him is precisely that which some recent writers would seem to have but just discovered. For instance, wherever, during the peninsular war, a general hospital was established under his orders separate wards were set apart for particular diseases, and separate buildings for surgical cases. Not only had each hospital its wards for convalescents, but the convalescents were removed weekly to a convalescent hospital, which, for the most part was some distance in the country."

"Dr. Millingen.—Even the formation of an army medical school is no new idea, for, in 1818, Dr. Millingen published a proposal that one should be established. As regards professors, he suggested the expediency of appointing professors of the following branches of the medical sciences, to be selected from the most able medical officers; namely, theory and practice of medicine; theory and practice of surgery; military hygiene; morbid anatomy, and botany."

Truly, there is nothing new under the sun!

"Dr. Jackson.—'The preservation of the health of soldiers in the field and in quarters'—so wrote Robert Jackson, in 1824—'is attained to a certain extent by a rigid observance of those forms of discipline and economy which are under the direction and surveillance of military officers.'"

"In India.—An administrative medical officer of the Army Medical Department was first sent to that country so as to arrive early in 1826."

Dr. Gordon gives a short *résumè* of the labours of the first Inspector-General of Hospitals of the British Army in India, in inquiries into the great mortality of newly arrived troops, its rate, and probable causes, from defects of clothing, food, lodging, and discipline. Next, a report was furnished to the Commander-in-chief in India, with a view to establishing a uniform system of clothing, dieting, and exercise for troops in that country. Next, the spirit ration was considered, as also "the proposed plan of substituting for it an equivalent in money, and for establishing canteens in which men might be supplied, under strict regulations, with certain quantities of wine or malt liquors."

"In 1828 a circular was, by the P M O, addressed to all army medical officers in the country, containing many most valuable directions in regard to the manner of proceeding on the occasion of cholera appearing as an epidemic.

"The advantage of early treatment of the attack was strongly inculcated: a medical officer was directed to reside in the hospital; daily inspection of the men was directed; and the concluding sentence of the circular so strongly prefigures the most recent recommendations that it deserves to be noticed here; it is dated 1st May, 1828. 'The occasional local origin of the epidemic must be particularly watched and attended to. In some instances lately it has been traced to originate and be present in one wing, or in two or three companies, or at one end of a barrack, as more exposed to the influence of miasma, or the air from foul drains, ditches,

and stagnant water; upon the removal of the men from which places there was an immediate cessation of the disease.'

"It will thus be seen that the prevention of disease has, throughout all ages, been carefully attended to, and the annals of the British army prove how active and important a part in this matter army medical officers have ever taken, from the time that a standing army was first formed. That this was very often under great discouragement is the experience of the whole generation of army medical officers, whether on full pay or in retirement; and there are many who can still relate acts of harshness to which they have been subjected for persistently and fearlessly representing matters which, although considered conducive to military discipline, were grievously injurious to health and life of the troops."

Thus does Dr. Gordon in his first chapter furnish to the military medical officer the means of refuting, by the unimpeachable testimony of numerous references to, and extracts from, the writings of British medical officers, the many and serious charges of ignorance and negligence made against their department at the time that the disasters of the first Crimean Winter excited so much popular indignation, and for the quelling of which the whole medical department of the British army was made the subject of undeserved obloquy and reproach, in order to cover the shortcomings of a system of military administration which had, by restrictions and rebuffs, so completely shackled and cramped the members of the administrative and executive ranks of the medical department, and had reduced that branch of the service to such a short-handed state, that, when emergency arose, disorder and confusion were the inevitable results, and it was even found necessary to supplement the military medical ranks with civil practitioners, as physicians, surgeons, and pathologists, and with junior medical men as acting assistant surgeons.

As a proof that the army medical department is still the subject of remarks of a disparaging nature by writers on military matters, it will be sufficient to insert the following extract from an article on "The Aldershot Question," in the *United Service Gazette* of 15th September, 1866:—"When, at the commencement of the Crimean war, Miss Nightingale fell like a shell amongst the military doctors, and declared, among other startling things, that scarlet fever, measles, and small-pox were produced and created by over-crowding and bad ventilation, a universal shout of derision from the professionals was all the benevolent lady got for her pains. It was held that those three plagues of infancy came as naturally as the

teeth, and that any attempt to prevent their occurrence by sanitary measures was sheer nonsense."

How unjust such aspersions are Dr. Gordon's book fully shows, and since its publication a repetition of such charges can only occur in consequence of a degree of ignorance no longer excusable on the part of any writer on military sanitary questions.

Dr. Gordon devotes Chapter VI. to the subject of ships; and we can confidently state that in this chapter will be found a mass of information on every subject connected with troops on board ship, such as could only have been furnished by a person in the author's position, and habitually and practically conversant with the subject; to the junior medical officer, proceeding on his first voyage, this chapter will be invaluable, and we would strongly recommend to the military medical authorities that this book, were it for this chapter alone, be classed among the text books essential to the outfit of every assistant surgeon entering the service.[a] In this chapter the author gives a code of rules, which he drew up for the instruction of medical officers arriving at Calcutta with troops, and mentions that they have since been embodied in a circular, dated Army Medical Department, 15th January, 1865.

Chapter IX is devoted to the subject of army hospitals. Dr. Gordon describes the three kinds of hospitals necessary on service, viz.: first, regimental; second, field general hospital; and, third, purely general hospital. They are all necessary; and Dr. Gordon deprecates the tendency which at present exists to the centralization and absorption of the regimental and field hospitals in the general hospital; with respect to the present system of general hospitals, in which the responsibility is divided between the medical officers, the military commandants, and the purveyors, Dr. Gordon observes:—

"The medical officer in charge is the responsible agent for all requirements of the sick; yet under the present system he himself is deprived of the power of ordering the very requirements which he may deem indispensable for them; being checked, on the one hand, by the military commandant, on the other, by a purveyor; both of whom, be it remembered, are unqualified, by absence of medical training, for the performance of duties they have actually to superintend; yet having no personal responsibility for the failure of them."

[a] A drawing is given of sections of a ship illustrating the mode of calculating space for troops, and rendering this very important point perfectly clear.

In fact, as it appears to us, the medical officers of the army stand in much the same position with regard to commandants and purveyors as do union medical officers in this country to boards of guardians, and, as is well known, in the latter case opinions occasionally differ, with what result to the sick we need hardly mention.

On one subject—and we may say only one—connected with military hospitals, is our author silent, and that is on *female nurses*. Are we right in attributing this to a polite reticence on the part of one who, as we have above shown, does not hesitate to speak out boldly enough on other subjects? How far may this omission be accounted for by the extremely anomalous system by which the department of female nurses in military hospitals is now administered? a system presided over by a lady "Superintendent-General of Nurses," who, though theoretically subordinate to the medical officers, is practically in a superior position, from the fact of having the privilege, as "head of a department," of communicating direct with the Secretary of State for War, a privilege which, we need hardly say, is possessed neither by principal medical officers, commandants, nor purveyors of general military hospitals.

Chapters X. and XI. contain full information on the means of transport for sick and wounded, and on the establishments and equipment for sick and wounded; and Chapter XII. gives some illustrations of the rates of sick and wounded on service. Chapter XIII. treats on medical arrangements generally for a campaign; this chapter we consider will be found by the senior medical officer fully as valuable as we have pronounced Chapter IX., on ships, to be to the junior. In it will be found, as indeed throughout the whole work, such attention to points of most minute detail as must be invaluably suggestive to the military surgeon, which clearly indicates how profoundly the author has considered his subject, and how high is the degree of administrative talent which he possesses, and which we doubt not, when occasion arises, will add to the honours and position which he has already so deservedly earned in the Army Medical Department; the advice to the medical officer "who would succeed" is so applicable to all classes that we extract it:—

"Also to bear in mind that his own superiors and the public look more to the fact of certain results having been attained, than to the means employed to a specific end. These means must be straightforward and open; yet the medical, or indeed any other officer who would succeed,

must be prepared at all risks to do so; and to sink all considerations of a minor nature in the one great object of contributing, as far as in him lies, to the success of the service upon which he is about to enter."

We must now draw to a close our already lengthened notice of this work: we congratulate the medical department of the army on this addition to its literature; and we believe that if such knowledge of the true dignity and position of the army surgeon, as may be deduced from it, were more generally diffused among military medical officers and their combatant brother officers, many of the petty bickerings and irritating discussions which appear so frequently in military and medical publications about precedence, relative rank, &c., would soon cease to exist; and that Dr. Gordon has rendered true service to the department to which he belongs, by the dignified and dispassionate manner in which he alludes to many vexed points in the mutual relations of the commanding military officers and their medical coadjutors; he does so, incidentally, as it were, on questions obviously and naturally rising out of his subject, and markedly avoids founding thereon any querulous appeal or remonstrance on the state of these relations as they at present exist; he prefers to indicate what they ought to be by illustration, as for instance, the Duke of Wellington frequently communicating to Sir James M'Grigor the intended movements of the army—and as a particular instance mentions the beneficial results of this system in the thoroughly effective departmental arrangements which Sir James M'Grigor was thereby enabled to make in anticipation of the attack on Badajos; he also specifies a personal instance of the advantages of a similar system while he was serving as senior medical officer of the force under Major-General Sir Edward Lugard, K.C.B., during the operations against the Indian rebels in 1858.

From a perusal of this work may be perceived the great importance of the subject on which it treats, and how worthy of the most strenuous effort are the objects of ambition which are therein held forth for the attainment of the aspiring army surgeon.

The circumstances under which the book was written explain its having so much the character of a collection of aphorisms—namely, the attention of the author as member of the Sanitary Commission for Bengal, having been specially directed to the suggestion of improvements in the condition of our troops in that country, it was necessary to refer to many works connected with

this and allied subjects, he was thus led to take notes, which together with the results of his own experience, assumed on arrangement their present shape.

The book has been printed in Calcutta, and published in London; this is to be regretted, as the paper and type are both inferior to those with which Mr. Churchill generally favours his customers; and from superfluous margin not having been trimmed off, the external appearance suggests the idea of the book being larger than it is found to be on internal inspection. There are also a few typographical errors of spelling and punctuation, which, however, are of minor importance, and in no way detract from the true merits of the work, which we strongly recommend to the study of our military readers.

Fissure of the Soft and Hard Palate. By J. Mason Warren, M.D.; Surgeon at Massachussett's General Hospital, &c. (Extracted from the *Transactions of the American Medical Association.*) Two Plates. Philadelphia: Collins. Pamphlet.

We hail with pleasure this further contribution from the pen of one who has been for a quarter of a century the successful operator in the New World on cases of fissured palate. Mr. Mason Warren was the first man to recognize the fact that fissures in the hard palate were the result rather of misplaced than deficient bone, and to apply to their remedy the obvious method of dissecting off the muco-periosteum from either side, and uniting its edges at a lower level. In short, he put what may be termed a false ceiling to the mouth. This ingenious method approved itself to Avery and Pollock of London, to Field of Brighton, and to Maurice Collis of Dublin, all of whose names are gratefully mentioned in the present paper by Warren, as supporting his claims to priority against Langenbeck. This last surgeon had, in 1862 (nineteen years after Warren's first publication), put forward an identical process as a new invention of his own, apparently in happy ignorance of what Warren had done. The readers of this Journal are aware that Messrs. Lestrange and Collis had also planned a similar operation somewhere about 1845, without a knowledge of Warren's work; but they have always yielded the palm to Warren, to whom the priority of the idea is justly due. Mr. Warren, in this pamphlet,

shows himself fully alive to all that has been written on the subject; and the various improvements in the performance of the operation which have emanated from Dublin surgeons are well known and highly valued by him; among these we find the suggestions of Sir Philip Crampton, Mr. Collis, and Mr. Smyly prominent. Mr. Warren's acquaintance with Irish surgery might be a lesson to many at home who remain habitually ignorant of the doings of their brethren.

Mr. Warren relies principally on the curved scissors for division of the palatine muscles and mucous membrane. By seizing the half uvula, and drawing it across the cleft, the palato-pharyngeus is put on the stretch; it is then divided, and the levator palati then appears as a horizontal bar above and behind the palate; this also is divided by one or more strokes of the scissors, until all resisting bands of muscle or mucous membrane are severed and the palate hangs as a loose curtain. By this means Mr. Warren thinks perfect division of all resisting bands is obtained, and nothing is divided unnecessarily; whereas by Fergusson's method (difficult and uncertain as it must always be) an unvarying amount of muscular tissue is divided, without reference to the necessities of each case. Such is Mr. Warren's view of the incisions required. We have only to add that he always separates the muco-periosteum first, before dealing with the soft palate or its muscles, and that he calls in the aid of the mechanical dentist to cover with vulcanite or gold the anterior portions of the cleft in the hard palate. One of his reasons for so doing does not hold good, namely, that these operations must be done without chloroform. We have twice seen Mr. Collis operate on the palate while the patient was fully chloroformed, and on neither occasion was there any trouble from the blood, it was removed quite as easily as when the patient was conscious; and the operation was done at much greater ease to the surgeon, and more rapidly than under other circumstances. Still there is no doubt it is a severe operation, and takes a great deal out of a patient; and when a plate will do as well to close the hard palate, we should prefer it.

The only remaining point in Mr. Warren's paper which calls for observation is that he prepares his ligatures of silk by soaking them for a few days in compound tincture of benzoin, by which they acquire an adhesive property, and are less apt to slip when the ligatures are tied. This improvement he owes to a former pupil, Dr. Calvin Page.

The Malformations, Diseases, and Injuries of the Fingers and Toes, and their Surgical Treatment. By THOMAS ANNANDALE, F.R.C.S., Edin. Edinburgh: Edmonston & Douglas, 8vo, pp. 292.

THE book we now bring before our readers has been the successful essay for the Jacksonian prize of 1864, and afterwards published, with considerable additions, at Edinburgh in its present form.

We are happy in congratulating Mr. Annandale on his success, and consider that his labour and zeal for the development of the subject he has adopted have not been too highly rewarded.

The first chapter is devoted to the consideration of the congenital malformations of the fingers and toes, under the following six heads:—

1. Congenital Hypertrophy.
2. Congenital Deficiencies.
3. Supernumerary Fingers and Toes.
4. Congenital Union.
5. Congenital Contraction.
6. Congenital Tumours.

The author treats in detail of the various subjects, illustrating them by lithographs and drawings, taken principally from specimens in his own possession, the Museum of Newcastle-on-Tyne Infirmary, and Edinburgh University.

The division of supernumerary fingers and toes given in this chapter is the most practical we know of, as it points anatomically to the exact condition present, and guides us in the operative measures for the remedy of such condition. It is as follows:—

"1*st*. As a deficient organ attached loosely or by a narrow pedicle to the hand, foot, or another digit.

"2*nd*. As a more or less developed organ, free at its extremity, and articulating with the head or sides of a metacarpal, metatarsal, or phalangeal bone, which is common to it and another digit.

"3*rd*. As a fully developed organ, having its own metacarpal or metatarsal and phalangeal bones distinct.

"4*th*. As a more or less developed organ intimately united along its whole length to another digit, and having either an additional metacarpal or metatarsal bone of its own, or articulating with the head of one which is common to it and the other digit."

The probability of these deformities being hereditary is glanced

at in page 2, and the Cases 12 and 13 furnish us with a strong presumption in its favour.

The treatment recommended for the relief of those conditions is simple, and based on the soundest surgical principles. At page 58 a diagram is given illustrating an original and ingenious method of operating on webbed fingers and toes of the second, variety on the principle first suggested by the late Mr. Liston:—

"The surgical treatment of the second variety of congenital union has not hitherto been satisfactory, the intimate connexion of the soft parts in such cases making it very difficult to prevent re-union taking place after operations have been performed to separate the bond of union. The treatment, however, that I am now going to describe has proved very successful, and I venture to hope that it will be of service in cases of this deformity. The principle of this operation is not new, but the method of its performance is, as far as I am aware, original. This plan of operating is mentioned by the late Mr. Liston,[a] but it does not appear ever to have been practised until lately, when Professor Lister of Glasgow treated a case of united digits in this way. The operation consists in making a perforation through the proximal end of the web or band of union, introducing some foreign body into the wound, and retaining it there until the edges of the opening are cicatrized, or nearly so; the remainder of the union is then to be divided, and the wounds carefully dressed. By a proper employment of this treatment there is little chance of the separated digits re-uniting; and Professor Lister informs me that the result of a case on which he operated after this manner has been most successful. The following method of performing this operation will, I think, be found most convenient.

"Introduce a trochar and canula (a No. 4 canula answers very well) through the web or union which connects the two digits, at a point where the cleft between these two organs would naturally be. Having thus made an opening completely through the web, the trochar is to be withdrawn, and a piece of Indian-rubber cord, about the thickness of a No. 8 catheter, passed through the canula; the canula may now be removed, leaving the cord in the wound; one end of the cord is to be carried along the dorsum of the hand, and secured to a band passed round the wrist, the other end is to be carried along the palm of the hand, and secured at the wrist in the same manner, as is illustrated in the diagram. The advantage of this plan is that the cord being soft and elastic, allows the hand to move freely without disarranging the apparatus, while at the same time it also acts as an efficient foreign body. In cases where the union is not quite so firm, I have divided the

[a] Operative Surgery, by Liston, p. 474.

whole union at once, separated the two layers of the skin at the side of the connected digits, brought the edges of these wounds together with sutures, and then introduced the elastic cord between the divided fingers, adjusting it in the same way at the wrist. This treatment prevents the wounds at the side of the fingers re-uniting, and keeps up a gentle pressure on the lower part of the cleft. Even in this method of operating great care is required in conducting the after treatment."

Chapter II. treats of inflammatory diseases of the digits, the following order being observed:—

1. Acute inflammation affecting the skin and areolar tissue.
2. Acute inflammation affecting the tendons and their sheaths.
3. Acute inflammation affecting the periosteum and bone.

The different forms of paronychia are described according to the tissue attacked. But nothing has been added to the pathology of this disease, except that our author found by dissection that in many of the worst varieties of whitlow attacking the tendons and their sheaths, the joints remain unaffected.

In the treatment of this affection we find nothing newer than Dupuytren has taught many years ago, nor is there any rule laid down to guide us in the extent and depth of our incision in the second and third varieties of this inflammation. The rule adopted in the Dublin School of Surgery is to cut down to the bone in the mesian line, avoiding the joints, as we never can tell when the inflammation of one structure has travelled to and implicated its neighbour.

The paragraph on horny hypertrophy of the nails is very brief, and gives no treatment. We consider the operation proposed and practised by Mr. George Lewis Cooper, and described by him in the *Lancet* for 15th April, 1866, the most suitable to the affection. The mode of proceeding is as follows:—Divide the matrix in the centre, and slightly loosen the horny structure from its attachment, then by a sudden evulsion it comes away.

The pathology of in-growing toe-nails is well described. But we cannot agree with Mr. Annandale that the operative measure proposed by Dupuytren for its relief is the best, viz., to divide the nail longitudinally down to the root, and then, with a pair of forceps, tear out the portion of it which lies against the sore.

In the first place, the operation is most painful if the patient will not submit to chloroform; secondly, the after-dressing of a naked matrix is excessively painful.

We prefer the method practised by the late Mr. Smyly, of this

city. The patient being placed under the influence of chloroform, he proceeded then to remove the entire offending mass with one clean cut of a strong scissors. This perfectly relieves the affection, and the after-dressing is painless, as there is no matrix exposed.

Chapter IV. treats of tumours of the hard and soft textures of the digits. We would especially call attention to the section on enchondroma, the pathology and treatment of which is fully entered into.

Chapter V.—In this chapter injuries of the digits are considered under the following heads:—

1. Injuries of the Soft Parts.
3. Injuries of the Bursæ and Joints.
3. Injuries of the Periosteum and Bone.

At page 203 a most interesting case is given of a wound of the digital nerve of the left ring finger, followed by paralysis, burning sensation, and other abnormal symptoms. This case is the more interesting because of the importance attached to injuries of the nerves during the late American campaign. It is in the neuralgic pain attending those injuries that the American surgeons have been so successful with the hypodermic injection of the salts of morphia.

"CASE 35.—*Wound of a Digital Nerve, followed by Paralysis, Burning Sensations, and other Abnormal Symptoms.*

"Mrs. ——, aged sixty-four, applied to Mr. Syme, June 28, 1865, for a very painful complaint of one finger. Nine months ago, the patient accidentally inflicted, with a knife, a wound over the palmar and lateral aspect of the first phalanx of the ring finger of the left hand. The wound healed quickly, and without any inconvenience. One month after the accident (the wound then being perfectly healed) she first began to suffer from pain in the cicatrix, and round about it. This part became very sensitive, so that the slightest touch caused great agony. Some swelling of the fingers and hand then took place, and the pain, and a burning sensation, passed up into the hand, forearm, and elbow, occasionally also shooting up into the arm. At this time her medical attendant made an incision near the cicatrix, but it was followed by only a very slight temporary relief. Blisters were also employed, but without any benefit resulting. The burning sensation was now not only confined to the affected arm and hand, but was often very severe in the right hand and forearm, and also sometimes in the soles of both feet. She then placed herself under the care of an eminent physician, who treated her most carefully with a variety of local applications, among which were chloroform, belladonna,

aconite, etc. Not obtaining relief from these means, she came to Edinburgh for advice.

"On examination of the left arm, the elbow, wrist, and digital joints were stiff and painful. The fingers were tapered, and their skin had the characteristic glazed or glossy appearance (which was first observed by Mr. Paget in cases of injury of the nerves) well marked. The colour of the skin was pale, with a slightly yellowish tinge. The nails were dry and brittle. The glossy state of the skin was also present on the dorsal surface of the hand, and for a little distance up the forearm. The left hand and all its digits were very sensitive, but the injured finger was most markedly so, especially at its extremity, and on its palmar aspect. The slightest touch on this finger caused such distressing pain that the patient would scarcely permit the hand to be approached, much less touched. On a careful examination of the affected finger, a cicatrix was distinguished in the situation of the original wound. On pressing over this point great pain was complained of.

"The right hand was also slightly stiff. Its palmar aspect had a shrivelled and wrinkled appearance, but was not tender on pressure. The patient suffers very much from the pain and burning sensation. These symptoms are almost constant, but are more severe at some times than at others. Occasionally they are temporarily suspended, but this does not last long. The pain from which the patient suffers is like that of neuralgia, but it is the peculiar burning sensation of which she complains most. This sensation she compares to the application of a hot iron; and it attacks not only the affected hand but passes up into the forearm and arm of the same side. It is often very severe in the right hand, and is also sometimes present in the soles of her feet, but here it is not so bad as in the hands.

"The patient's general health is apparently good, and there is no history or symptom of any other nervous disease. Her friends think that she is a little more "nervous" than she used to be; but this is scarcely to be wondered at, considering what she has suffered; and, in fact, if she had not had a very good constitution, her general health would not have been so good as it is.

"*June* 31*st*.—Having carefully considered the case, Mr. Sȳme thought it right to propose amputation of the affected finger, as the history clearly showed that the symptoms dated from the injury to its nerve, and the extreme sensitiveness of this finger pointed to it as the probable source of the painful symptoms in the other regions. The patient willingly agreed to the operation, and the finger was therefore removed at its metacarpo-phalangeal joint.

"*July* 3*rd*.—Patient feels the affected hand much easier, but still has occasional attacks of the burning sensation in the right hand. Finger was dressed for first time. The wound looks well.

"*July 6th.*—Last night the patient had a severe attack of the burning sensation in both hands, but is easier again this morning. Wound is dressed daily, and is healing nicely.

"*July 10th.*—Patient has been gradually improving for the last few days. She is very much better to-day, and is quite free from her old pains. She allowed me to grasp the affected hand freely, move the fingers and wrist-joint, and in fact handle the limb in a way she could not for a moment have borne before the operation. The peculiar glossy state of the skin is not nearly so well marked now. Ligatures have all come away, and the wound is nearly healed.

"*July 15th.*—Since last date patient has had some return of the burning sensation, but it is not so bad as it used to be. She was anxious to return to the country, as the hand was so well, and, accordingly, to-day left town, promising to report progress.

"*August 12th.*—The patient's daughter writes to-day, and states that her mother's general health is much improved. She still suffers occasionally from the burning sensation in the left hand, but it is not so severe as formerly. The wound is quite healed, and the whole hand and arm are more easily moved than before. The burning sensation has, however, increased in intensity in the right hand, which has become somewhat swollen and its joints stiffened.

"*Examination of the Finger after Amputation.*

"Two hours after the finger had been removed, I made a careful dissection of its nerves, and found that the nerve which usually runs along the radial border of the palmar aspect of the digits had been injured at the point corresponding to the cicatrix of the original wound. At this point the nerve had been apparently partially divided, and had become re-united. There was an enlargement of the nerve at the situation of the injury. This enlargement of the nerve extended for about the eighth of an inch above and below where it had been wounded. In appearance it was more vascular than the other nervous tissue, and looked as if suffering from some slight inflammatory process. In addition to this condition of the injured nerve, the Paccinian bodies in connexion with the nerves and their branches on the palmar aspect of the finger were particularly well developed. For this reason, I had a careful drawing taken from my dissection of these nerves, and the accompanying woodcut is from this drawing. The line *a* points to the place where the nerve had been injured. The drawing does not represent the whole of the Paccinian bodies which were connected with the nerves of this finger, for, in dissecting them out of the fatty and areolar tissue, a considerable number were lost and destroyed."

In the thirteenth volume of our first series Mr. Hamilton has

recorded a number of cases very similar to this; and, as his paper is most complete and exhaustive of the subject, we are much surprised Mr. Annandale has not referred to it. In one of the cases mentioned by Mr. Hamilton amputation of the leg was performed with results no more satisfactory than those in the case given by Mr. Annandale. Three of the cases given were treated by mercury—in one relief followed. In another, in which Sir P. Crampton, Sir Astley Cooper, John Bell, Dr. Baillie, and Mr. H. Cline had been consulted as to removing a portion of the nerve, and whose various opinions Mr. Hamilton mentions, the exhibition of mercury for pneumonia, some time after the nerve had been excised by Sir P. Crampton, was followed by complete subsidence of the symptoms.

In the third case the mercury produced no effect, but the termination of it is so remarkable that we shall quote Mr. Hamilton's words in describing it:—

"June 14th, Mr. Quinan told me that some days since she got a fright in the street and fell into a hysterical fit, and had to be carried home; for a couple of days after recovering from it she was affected with a constant sobbing; and when this ceased, hiccup of a most violent kind began, with difficulty of swallowing, and pain and tenderness in the epigastrium, apparently the result of the violent action of the diaphragm. After the fit all pain and swelling left the arm, and have never returned. The sudden violent impression on the nervous system generally, having quite mastered the local affection."

The conclusions drawn by Mr. Hamilton from his examination of the subject are as follows:—

"1. Pain of the severest character in the injured part, or shooting from it in various directions in the course of the nerves to the extremities, or to the brain. That it is often periodical, and generally attended with the most exquisite tenderness.

"2. That with the pain there is frequently redness and swelling, resembling a good deal the appearance of the skin in inflammation of the fascia, or a deep collection of matter, but differing, in being of a paler colour and more œdematous character, in being subject to sudden increase and diminution, and at times being only periodical.

"3. Contraction of the limb, and spasms of an unusually violent character; the spasms in some instances going into the genuine convulsion of epilepsy.

"4. That the constitutional symptoms are those commonly called

nervous and hysterical, viz.: depression of spirits, prostration of strength, globus, &c., but that hectic fever has also presented itself.

"5. That all the symptoms, uninfluenced by every remedy made use of, have gradually declined after a long interval, having apparently undergone a natural cure. But that in a few instances the termination has been fatal."

In a case recently under our own observation, in which the symptoms of irritation and burning sensations pervaded the whole body, and were often accompanied by spasms of a tetanic character, we found that these subsided under the use of enforced rest, by means of a splint, and frequent blistering along the course of the brachial plexus of nerves. Altogether, we believe the subject deserving of more attention than it has hitherto received; and that the study of injuries of the fingers and toes is daily becoming more necessary since the introduction of circular saws and such machinery into this country.

In the article on senile gangrene we recognize nothing more modern in the pathology and treatment than what has been taught by Mr. Pott in his chirurgical works of 1808.

Mr. Annandale states that this disease depends on a diseased state of the coats of the arteries, while Mr. Henry Lee regards it as a chronic process, and caused by the breaking-up and entrance into the circulation of calcareous, fatty, and other morbid deposits from the inner coats of the vessels, with shreds of fibrin, which may have temporarily attached themselves to the vessel when the lining membrane has given way. Sir B. Brodie believed that the remote cause of this condition depended on ossification of the arteries of the thigh, and leg, and contraction and obliteration; yet he did not think, as others have, that this condition was produced by inflammation, for he mentions that in none of these cases in which the arteries were contracted and impervious, were there any such appearances as would have indicated that these contractions had been the result of inflammation. He accounts for it by supposing it to be a result of a contractile process analogous to that which produces a permanent stricture of the urethra or œsophagus. To inflammation he has ascribed the exciting cause.

Mr. Annandale, in alluding to the treatment of senile gangrene, recommends that soothing poultices, and other applications of this kind, should be made to the gangrenous part. We believe with Sir B. Brodie that poulticing is to be condemned, as it exposes the part to alterations of temperature, being obliged to renew them at

least three times daily. The mode Sir Benjamin prefers is to apply simple calamine cerate to the ulcers, and to the limb, as far as the middle of the thigh, layers of carded wool, sufficient to make the leg seem twice its normal circumference. This dressing is not to be removed more than once a week. The latter part of his treatment he owes to Mr. Vance, formerly surgeon to Greenwich Hospital.

The author, in speaking of the internal remedies, remarks that opium should be given freely in this disease, where there is much pain and restlessness.

As Mr. Pott was the first to introduce this valuable medicine for the relief of the malady, we think it but fair to him to state the precautions he gives when employing it. He says :—"I give one grain of opium every third or fourth hour, never less than three or four grains in the twenty-four hours, taking care to watch its narcotic effects, and keep the belly empty by clysters." Mr. Annandale omits to mention such precaution.

Chapter V. gives a good description of the nature and treatment of that rare disease termed scrivener's palsy, as well as some interesting cases of spasmodic affections of the fingers.

Chapter VI. is devoted to the consideration of an interesting and practical subject, namely, excision of the smaller joints. We must say that it is full of instructive information, and in it are to be found cases of great value to the practical surgeon, fully illustrating the beneficial effects of conservative surgery. We have lately performed the subperiosteal section of Langenbeck on the metacarpo-phalangeal joint, with the happiest results. We subjoin a case which the author illustrates by a diagram at page 262.

"Case 36.—*Excision of the Metacarpo-phalangeal Joints of all the Fingers.*

"G. M., aged seven, admitted into the Clinical Surgical Wards of the Royal Infirmary on the 1st of April, 1861, having injured his hand in a saw-mill. On admission, there was a wound across the back of the hand, which had divided the extensor tendons of all the fingers, and had opened into all the metacarpo-phalangeal joints. The first phalanges of the ring and little fingers had also been sawn through, immediately above their proximal articular extremities, so that the anterior portion of the hand was only attached to the posterior portion by little more than the flexor tendons and skin on the palm of the hand. The thumb was uninjured. Thinking it right to give the hand a chance of recovery, I

cut off the articular extremities of the metacarpal and phalangeal bones connected with the metacarpo-phalangeal joints of the four fingers. The hand was then placed on a splint, and light dressing applied. The wound healed well, and on the 8th of May the patient was dismissed quite well.

"On the 2nd of July, 1862, more than a year after the operation, I had an opportunity of examining the hand, and found that its appearance was wonderfully natural. It was slightly shortened, but was quite movable and useful. Complete flexion could not be performed."

In chapter VII., on amputation of fingers and toes, there is nothing which is to us an improvement.

In conclusion, we have to say that the general arrangement of this book is good; the cases are well and accurately taken; the divisions of the various chapters into sub-sections makes it easy of comprehension, and capable of being retained by the most superficial reader.

The language is simple, yet expressive; evidently showing that the author's object was to picture disease as it really exists, and to make his book capable of being understood, even by a student of one year's standing.

The lithographs are beautiful, and faithfully illustrate almost all the subjects treated off.

We can with confidence recommend this book to our readers as being the most complete on the subject in the English language, and containing nearly everything that requires to be known in its special department.

Symptomatologie und Diagnostik der Hirngeschwülste. Von DR. PAUL LADAME. Würzburg: 1865.

Symptoms and Diagnosis of Tumours of the Brain.

THE author commences by defining the limits of his work. He disclaims any intention of writing a complete monograph on intracranial tumours, but confines himself to merely their symptoms and diagnosis; further, he does not treat of every kind of tumour, but excludes from consideration the following:—1. Tumours which, during their development, break through the cranium, and appear externally; 2. Abcesses; 3. Aneurisms; 4. Cysts, whether simple or connected with solid growths, and whether parasitic or not;

and 5. Syphilitic tumours. Even after these restrictions, a large class of tumours is left, of which he treats from a purely clinical point of view, believing that in most instances it is impossible accurately to diagnose the anatomical nature of the tumour before death.

He endeavours to avoid the mistake committed by many writers of attributing *all* the symptoms observed during the life of the patient to the tumour found *post mortem* in his brain, and tries to discriminate those caused by the new growth from those due to complications affecting either the brain or other parts.

The book is divided into a general and a special part. In the first are given the symptoms which are common to all intracranial tumours, and which distinguish them from other brain diseases.

In the special part, the diagnosis of the situation of the tumour is specially considered: this part is divided into chapters, each of which is devoted to the consideration of the tumours of a different locality. In each chapter is found first, a table containing the cases of tumour occurring in the part under consideration which the author has collected from other writers, arranged so as to give the name of the observer; the age and sex of the patient; the description of the tumour; the symptoms as they showed themselves during life in disturbances of sensibility, motility, special senses and nutrition; and finally, observations on the case.

Then follow the conclusions drawn from the examination of the table; and lastly, the author's own cases are given in detail. These we look on as the most valuable part of the book; the histories are recorded with great care, and each case is followed by an epicrisis or commentary in which are clearly pointed out its most important clinical and physiological features. In all 331 cases are analyzed; of these nine are original.

The early symptoms of a tumour in the brain are very variable, and not at all characteristic. They may set in acutely; but as a rule they commence very gradually, so gradually that in many cases there is great difficulty in determining precisely the exact date of their commencement. The origin of his disease is often attributed by the patient to an injury; but in such cases careful enquiry will frequently discover that, prior to the date of the blow or fall, head symptoms existed, although perhaps in a very slight degree.

The course of the disease is characterized especially by the remittent character of the symptoms, and by their great variety. With regard to the latter peculiarity, the author remarks that we

have to do with neither a single morbid product nor with a single diseased organ; that the brain is in reality a group of organs, the respective functions of which are indeed imperfectly known, but nevertheless distinct; hence, diversity of symptoms should no more cause surprise in brain diseases than it does in diseases of the abdomen, where in one case the liver, in another the stomach, and in a third the kidneys, are the seat of the affection.

Disturbances of sensation are found in almost all cases of intracranial tumour; they generally appear early, and persist through the entire duration of the case; of these headache is the chief. Hasse, indeed, thinks it is never entirely wanting, but the author finds it absent in rather more than one-fourth of his cases. In character it it varies greatly—it may be continuous and of great severity; or remittent, presenting exacerbations, in the intervals of which it is slight but never entirely absent; or it may be intermittent, in which case it is liable to be mistaken for ordinary hemicrania. The acute attacks often occur in the night, and are sometimes terminated by vomiting, convulsions, or even death. In the same patient, the headache may be at first intermittent; later it may become remittent, and finally continuous. The kind of pain varies; sharp and cutting, dull and heavy, beating or darting; it may also be felt as a sensation of extreme heat or cold. The position of the pain also varies; it may be felt generally over the entire head, or general at first, it may subsequently become localized in one region, or it may be localized from the first. Its seat does not infallibly point out the position of the intracranial disease. The pain is usually increased by expiratory efforts; but this is not, as Romberg supposed, diagnostic of the headache caused by a tumour. The circumstances which chiefly characterize it are its remissions, severity, and, above all, its obstinate resistance to treatment.

Painful affections of the parts supplied by the fifth nerve are frequently observed. These differ in no appreciable manner from ordinary facial neuralgia; but taken in connexion with other symptoms of intracranial tumour, they are important, as they always indicate a direct implication of the fifth nerve, and hence point out the seat of the disease. The painful parts are very generally, at a later period, deprived of sensibility. Pains in the trunk or limbs are sometimes, but not constantly, felt; they are often aggravated on the approach of bad weather, and may be mistaken for rheumatism. Anesthesia is not unusual, most common in the face, sometimes affecting the limbs, very rarely the entire body. It is

generally preceded by pain, formication, or some other kind of dysthesia, and frequently accompanied by motor disturbance. Attacks of giddiness or swooning are not infrequent; when accompanied by headache they are of great diagnostic importance.

The disturbances of motility may be divided into two great classes:—1. Those arising from irritation. 2. Those arising from loss of function of some part of the brain. In general they are more common than disturbances of sensation, being met with in five-sixths of the author's cases. They may occur suddenly, and as the first symptoms, but more frequently they come on gradually, and are preceded by headache. Of the symptoms belonging to the first class of motor disturbance the most important are *convulsions;* these may be of every degree of severity, from the twitching of a few muscles to fits of epilepsy; they are sometimes a very early symptom, and sometimes show themselves only a few hours before death; they may recur at variable intervals, and often become more frequent as the disease goes on. They are very generally followed by paralysis, but this does not always stop the convulsive movements which may continue to affect the paralysed parts. Among the less frequent symptoms of the irritative class may be enumerated tonic cramp of the muscles of the neck, or of an extremity; trembling generally of the hands or head; choreic movements; rotation movements; and loss of co-ordinating power, so that, though there may be no actual paralysis, standing or walking is impossible.

In the second class of motor disturbances, or those due to loss of function of parts of the brain, are included the various forms of paralysis; these are as diversified as are the phenomena of the first class. Hemiplegia is the most common form; it may appear suddenly and follow an apoplectiform attack, in which case, in addition to the tumour, there is generally some other brain disease, such as softening or hemorrhage; but most frequently it comes on gradually and develops itself out of a condition of simple weakness. Friedreich has observed that in many cases the face is first affected, then the arm, and lastly the leg. In general, the face is paralysed on the same side as the limbs; when the paralysis is crossed, there is good reason for supposing the pons varolii to be the seat of disease. The facial paralysis is usually of the imperfect kind which co-exists with central disease of the portio dura. Paraplegia is sometimes observed; in these cases the tumour is generally situated in or near to the medulla oblongata. This cerebral paraplegia differs from that produced by spinal disease in affecting the lower limbs, not

simultaneously, but one after the other, and in never being equally complete on both sides. Various forms of local paralysis, as of the face or of a single limb, are met with. The author records a curious instance in which the extensor muscles of the wrists and fingers were alone affected, the case simulating one of lead poisoning. Partial paralysis of the tongue is not infrequent, while complete glossoplegia is very rare. Towards the end of the patient's life involuntary evacuations of urine and feces take place. In one case incontinence of urine was one of the earliest symptoms.

In about one-half of the cases of intracranial tumours collected in the work before us disturbances of the special senses were observed. The sense most frequently affected is that of sight; we find amblyopia or amaurosis coming on gradually or occurring suddenly, generally preceded by headache, and less complete in one eye than in the other. The anatomical changes in the fundus are first, inflammation, and subsequently atrophy of the optic nerve. The pupils are generally dilated, often unequal, rarely contracted. Squint, either paralytic or spasmodic, is not uncommon, and gives rise to diplopia; when the fifth nerve is pressed upon, there is insensibility of the conjunctiva and inflammation of the globe, followed by atrophy.

In the organs of hearing, we notice complete or partial deafness and noises in the ears.

Abnormal conditions of the senses of smell and taste have been seldom noticed; but it is probable that if more carefully sought for they would be more frequently found. When many of the special senses are simultaneously affected we have good reason to suspect a tumour at the base of the brain.

Mental disturbances show themselves in about one-third of the collected case; like the lesions of motility, they are irritative or paralytic: thus we may have hallucinations, monomania, mania, ecstasy; or, on the other hand, hypochondriasis, melancholia, with or without suicidal tendency and idiocy. In some cases the symptoms closely resemble those of general paralysis of the insane.

The powers of speech may be seriously impaired; sometimes the words are pronounced with effort, each syllable being strongly accentuated; sometimes there is stuttering, and sometimes the patient loses the recollection of words, or the power of finding those suitable to express his ideas.

The author utterly disbelieves in the localization of the seat of language in the frontal convolutions; he has found disturbance of

speech much more common when the lesion was situated in the corpus striatum or optic thalamus than when it affected the anterior lobes.

In the organic or nutritive functions, disturbances are frequently found; vomiting is very common, and usually associated with headache; sometimes it occurs only in the mornings. The appetite is often lost, sometimes abnormally increased. Constipation is the rule, rarely diarrhea is seen. The pulse is slow during the early stages of the disease, but quickened towards the close. Respiration is slow; and, in children, often accompanied by a peculiar cry. Fever sometimes occurs early, but more commonly only at a late period, and is then significant of meningitis, or some other complication. In cases where the floor of the fourth ventricle is involved in the disease sugar would probably be present in the urine; it does not appear, however, as yet, to have been actually detected; but Schultzer has found inosite in the urine of two patients who suffered from cancer involving the fourth ventricle. Death, which usually occurs by coma and collapse, may be hastened by the exhaustion produced by vomiting and loss of sleep, or by cachexia, hectic fever, or bed sores. In many instances, however, the nutritive functions are long unaffected, and in cases of primary cancer of the brain the cancerous cachexia is very slow to appear.

From the above sketch it will be seen that there is no one symptom in itself diagnostic of a tumour in the brain, but that it is only by taking the whole of the symptoms presented by a patient, and by considering their successive appearance and grouping, that a tolerably certain opinion may be formed as to the nature of his disease.

In the second part of the work before us, we find a classification of intracranial growths based on the situation in which they are developed. A chapter is devoted to the symptoms produced by one or more tumours in each of the following localities:—1. Medulla oblongata; 2. Fourth ventricle; 3. Crus cerebelli; 4. Pineal gland; 5. Corpora quadrigemina; 6. Cerebellum; 7. Pons varolii; 8. Crus cerebri; 9. Pituitary gland; 10. Middle fossa of skull; 11. Corpus striatum, and optic thalamus. 12. Corpus callosum; 13. Middle cerebral lobes; 14. Anterior cerebral lobes; 15. Posterior cerebral lobes; 16. All three lobes at once; 17. Convexity of brain; and 18. Several different parts of the brain at the same time.

Of tumours affecting the medulla oblongata nine cases are given, one of which is original. In these the chief symptoms were

referable to disturbed sensibility, *e.g.*, pain in the head and limbs, or anesthesia; convulsions were frequently present, and in three instances partial or complete paraplegia was noticed. In the author's case, that of a man aged 43, suffering from a cancerous tumour in the upper part of the medulla oblongata, a curious symptom was observed; whenever the upper or lower limb on one side was touched, the sensation was referred by the patient to the corresponding part of the opposite limb, and this, although he prefectly knew right from left, and extended the right or left hand according as he was bid. The other symptoms in this case were attacks of occipital headache, with giddiness and vomiting; staggering gait; paresis of the lower extremities; tonic cramps in the arms; convulsive attacks, followed by loss of consciousness; amaurosis; dulness of intellect; hallucinations; and, towards the close of life, delirium, paralysis of the bladder, constipation, and finally, difficult deglutition.

The number of cases of tumours seated in the fourth ventricle, crus cerebelli, pineal gland, and corpora quadrigemina, is very small, and the symptoms are very imperfectly known. Two cases of tumour in the crus cerebelli are given; in each the disease was on the left side, and in each hemiplegia was present; but in one it affected the right side, and in the other the left. Our readers will remember Brown-Séquard's explanation of the paralysis of the side corresponding to the lesion, a paralysis "due not to any immediate alteration of voluntary motor conductors, but to an irritation of some parts of a crus cerebelli, producing a paralysis by a reflex action upon some other part of the nervous centres."[a]

In two cases of extensive disease of the corpora quadrigemina occurring in children vision is said to have been unaffected. This is surprising, knowing as we do the close connexion there is between the optic tracts and the corpora quadrigemina. In neither case is any mention made of an ophthalmoscopic examination, so that it is very probable that, as Dr. Hughlings Jackson[b] shows to be far from unusual in such cases, serious lesions may have existed unsuspected in the fundus of one or both eyes.

Of tumours of the cerebellum twenty-seven cases are given, one of which is original. The symptoms were, occipital headache, convulsive attacks, difficulty in standing or walking from deficiency of co-ordinating power, convergent strabismus, and amblyopia, or

[a] Lects. on Phys. and Path. of the Central Nervous System. P. 201 and 263.
[b] Ophthalmic Review. Vol. iii., p. 45.

amaurosis. Among the negative symptoms, conspicuous by their absence, were all disturbances of sensation, except headache, paralysis, lesions of speech, and mental derangement. Vomiting, which has been considered, by many, a symptom of great importance in cerebellar disease, was found in only twenty-six cases. The author does not look on it as in any degree characteristic of disease in this organ. He thinks there is no evidence to show that the cerebellum is the nervous centre of either the nutritive or the generative functions. Cases of cerebellar tumour generally terminate by extension of the disease, so as to involve the medulla oblongata, and interfere with deglutition or respiration.

Of tumours of the pons varolii twenty-six cases (one original) are recorded. The most characteristic symptoms were crossed paralysis, the face being affected on one side—that of the lesion, and the limbs on the opposite side; pain or anesthesia in the paralysed parts, various disturbances of the special senses, impairment of the mental faculties, difficulty of speech, and early appearance of dysphagia. Contrary to the opinion of Albers, the author finds convulsions to be a very rare symptom in tumours of the pons—so much so, that he lays down the following rule:—"If a tumour has attained sufficient size to allow of its presence being diagnosed, and if convulsions be present the probability is, that the seat of the tumour is not in the pons varolii."—P. 119. He, however, admits that in the very early stages of the development of a tumour the irritation caused by its presence may give rise to convulsions, while later the irritation of the fibres is followed by their destruction, and the convulsive attacks give place to paralysis. Disturbances of the mental functions are found in one half of the cases of tumours in the pons, as frequently in fact, as when the disease is situate in the cerebral hemispheres. This is very strange, and in the present state of physiology inexplicable.

Not less curious are the cases in which, although nearly the entire pons or medulla oblongata is involved in a morbid growth, yet neither paralysis nor anesthesia is observed in the lower limbs, but only uncertainty and irregularity in their movements. In explanation of this anomaly three hypotheses have been proposed:—1. That the nerve fibres of the pons and medulla oblongata are not necessary channels of communication between the spinal cord and the parts of the encephalon anterior to the pons. This view is, we believe, not held by any physiologist at present. 2. That the morbid growth does not destroy the nerve fibres, but merely separates them from

one another, and, by pressure, renders them thinner. This opinion is held by Funke; and the author thinks it best adapted to explain the phenomena in his cases. 3. The hypothesis proposed by Brown-Séquard, "that the divided extremities of the destroyed fibres become connected with either the tails or the envelope of some caudate or bipolar cells, and that by means of the fibres originating from these cells communication may continue from below upwards and from above downwards; if such a reunion takes place between the extremities of divided fibres, below and above the seat of the compression or of the alteration, although there is no decided paralysis, there must be much inaccuracy in the action of the will on the muscles, because certain muscles must be put in action at a time when the will does not wish for their contraction. As to sensations, if their intensity is not diminished, there must be a diminution in the faculty of determining from where an impression comes."[a] In tumours of the pons the difficulty of speech is manifested by stammering and imperfect articulation, and is due, in the opinion of the author, to implication of the roots of the hypoglossal nerve.—P. 123.

Seven cases of tumours, seated in the crura cerebri, are recorded. The chief symptoms noted are, lesions of sensation (pain, formication, or anesthesia) and paralysis of the limbs and face on the side opposite to the tumour—giddiness, and, above all, paralysis of the oculo-motor nerve, first on the side of the disease, and subsequently, as the tumour enlarges, on the opposite side; jerking and convulsions in the paralysed limbs were noticed in four cases. The author considers at some length the question, whether the sensory fibres contained in the crus cerebri come from the opposite or from the same side of the body, and concludes, in opposition to Schiff, that they are always crossed. Those few cases in which the disturbances of sensation are said to have been on the same side as the brain lesion, having been either imperfectly recorded, or having been complicated by disease in other parts than one crus cerebri.

Nine cases are given of tumours in the pituitary gland and parts adjacent; one of these is original. The symptoms briefly are, severe frontal headache, and amblyopia, or amaurosis, affecting first one eye and subsequently extending to the other; there are no very marked disturbances of sensation or motion—no difficulty of speech, and the mental powers are well preserved. In the author's case atrophy

[a] Brown-Séquard. *Loc. cit.*—P. 232.

of the optic nerves was discovered before death by means of the ophthalmoscope, and after death the retina was found, on microscopic examination, to be perfectly normal. Bader records a somewhat similar case. These observations agree very well with the results recently obtained, experimentally, by Dr. Rosow, of St. Petersburgh, who found, in rabbits, thirty-nine days after section of the optic nerve, that the retina was scarcely altered from its healthy condition.[a]

Two kinds of atrophy of the optic nerve are observed to follow brain diseases:—First, progressive atrophy, which is not preceded by inflammation, and is characterized by the uniform white colour and sharply-marked border of the optic disc, whereby it contrasts strongly with the adjacent parts of the fundus; when this condition has existed for any length of time atrophy of the nerve fibres and of the layer of ganglionic cells of the retina takes place; but the other layers are well preserved. The other kind of atrophy is that which follows neuritis—it is the most common; in it the edges of the papillæ are ill-defined, and the colour is less brilliantly-white than in progressive atrophy; the retinal vessels, though small, are tortuous, and pigment is frequently accumulated in the neighbourhood of the nerve entrance; here extensive retinal changes, due chiefly to hypertrophy of connective tissue and sclerosis, or fatty degeneration of the proper nervous elements, are found in the vicinity of the optic disc, and often in the region of the macula lutea.

It does not seem very clear as yet what determines, in a given case, a particular kind of atrophy. M. Wecker[b] supposes that when an intra-cranial tumour grows very rapidly it causes neuritis, whereas, when the growth is more gradual, it may give rise to progressive atrophy, especially when it directly presses on the roots of the optic nerve. But it is not necessary that the intra-cranial disease should involve the optic nerve-fibres in any part of their course in order to produce amaurosis. Dr. Hughlings Jackson says:—"So far as the production of optic neuritis, by intra-cranial disease, is concerned, the position of the disease *seems* to be of little consequence, and there is nothing very peculiar in its nature, except that it is usually coarse."[c]

This writer has, however, found optic neuritis to coexist much

[a] British and Foreign Medico-chirugical Review. April, 1866. P. 526.
[b] Etudes Ophthalmologiques. T. ii., p. 386. Note.
[c] Ophthalmic Review. Vol. iii., p. 48.

more frequently with hemiplegia on the left than on the right side;[a] and has never yet seen amaurosis associated with disease limited to the motor tract.[b] In the case recorded by our author the form of atrophy which was present is not stated. In Bader's case[c] the optic nerves and retina were very much congested, but there does not appear to have been neuritis; the tumour pressed on the pons varolii and upper part of the medulla oblongata, and compressed the right vertebral artery. In the amaurosis which accompanies loco-motor ataxy Jackson[d] has found the optic discs to present the characters of white atrophy, and to show no sign of pre-existing neuritis; and Liebreich believes a greyish-blue colour of the discs to be almost characteristic of spinal amaurosis.[e] Finally, Galezowski[f] mentions a case of suspected tumour at the base of the skull, where one optic nerve underwent progressive atrophy, and the other was, at a later period, attacked by neuritis.

Returning from this digression, which we hope our readers will excuse in consideration of the interest which is at present being excited by ophthalmoscopy in nervous disorders, we come to notice briefly the symptoms presented by the remaining classes of tumours.

When the morbid growth is situated in the middle fossa of the skull the fifth nerve is constantly involved, as evidenced by pain, anesthesia, or inflammation in the parts to which it is distributed. The other symptoms of these tumours are not very characteristic of their position.

In fifteen cases where the corpus striatum or optic thalamus was the seat of disease the principal symptoms were hemiplegia, partial or complete, on the opposite side, and convulsive attacks; ordinary sensation, and the special senses were seldom affected, while mental impairment and difficulty or loss of speech were common. In considering this last symptom the author appears not to distinguish the speechlessness due to mental defect from that caused by inability to articulate; hence, his arguments against those who place the seat of language in the anterior lobes are not of much value.

Four cases of tumour in the corpus callosum offer no remarkable symptom which could distinguish them from those situated in the

[a] Ophthalmic Hospital Reports. Vol. v., p. 56.
[b] Ophthalmic Review. Vol. iii., p. 44.
[c] Guy's Hospital Reports. 3rd series, Vol. viii., p. 64.
[d] Lancet, 1865. Vol. i., p. 618—Vol. ii., p. 247.
[e] Atlas, p. 35.
[f] Etudes Ophthalmascopiques sur les altérations du nerf optique, p. 87.

cerebral lobes. Twenty-seven cases of tumours of the middle cerebral lobes are given, and twenty-seven where the new growth was seated in the anterior lobes. In each series we find hemiplegia, convulsions, and mental disturbances to occur in about equal proportion. Lesions of sensation are more common in tumours of the middle lobes, and chiefly show themselves as anesthesia of the paralysed parts. Impairment of the sense of smell is common when the anterior lobes are the seat of disease; the other special senses are more frequently affected when the tumour is situated in one of the middle lobes. Difficulty of speech seldom accompanies tumour of the anterior lobes, and while headache is common, it is seldom confined to the frontal region.

In tumours of the posterior cerebral lobes (fourteen cases) headache, though usually present, was not referred to the occiput, but was, in general, diffused over a great part of the head. The organs of special sense were very rarely affected. Paralysis was either slight or altogether absent; convulsive attacks were common, and mental disturbances, particularly such as indicate depression, were frequently observed. Nineteen cases where all three lobes were together occupied by one or more tumours show that, while headache is common, other disturbances of sensibility are rarely met with. Hemiplegia is not very common, but epileptic attacks are by no means infrequent. The organs of special sense do not suffer much. The mind is often impaired.

Seventeen cases of tumours of the convex surface of the brain presented the following symptoms:—Headache, generally limited to one region of the head, but not always to the seat of the tumour; epileptic convulsions, and mental disturbances, generally of an irritative kind—as mania, monomania of riches, &c. Anethesia, paralysis, and lesions of the special senses were, as a rule, not observed.

The last chapter treats of those cases where several tumours are found situated in different parts of the brain; fifty-two examples of these are given. As may be supposed the diagnosis is, in most cases, impossible, the symptoms of the larger tumour generally masking those which are produced by the smaller growths. The difficulties are fully recognised by the author, and those cases in which some certainty of diagnosis is attainable are distinguished from those where the true nature of the disease can only be revealed *post mortem.*

In conclusion, we would recommend to our readers the work before us as a valuable contribution to the literature of cerebral disease.

Codex Medicamentarius, Pharmacopée Française. Rédigée par ordre du Gouvernement, la Commission de rédaction étant composée de Professeurs de la Faculté de Médecine et de l'École Supérieure de Pharmacie de Paris, de Membres de l'Académie Impériale de Médecine et de la Société de Pharmacie de Paris. Paris: J. B. Baillière et Fils, 1866.

Codex Medicamentarius: French Pharmacopœia. Compiled by order of the Government, the Committee of Publication being composed of Professors in the Faculty of Medicine and of the Upper School of Pharmacy of Paris; of Members of the Imperial Academy of Medicine and of the Pharmaceutical Society of Paris. 8vo, pp. 784.

The new French *Pharmacopœia*, which has just appeared under the sanction of the Imperial Government, would seem to have been rather more than five years in preparation, the necessary authorization having received the Emperor's signature at the Palace of Fontainebleau on the 20th June, 1861. The dates of the former editions have been respectively 1748, 1818, and 1837.

"The *Codex Medicamentarius* (we are informed in the Preface) is composed of three divisions:—Preliminary Information; Materia Medica; Pharmacopœia. Under the title of Preliminary Information (*Notions Preliminaires*) the *Codex Medicamentarius* comprises the most general and most usual numerical data as to the correspondence of the ancient French weights and of foreign weights with the metrical system; the estimation in weight of spoonfuls, drops, pinches, handfuls, &c.; of the liquid or solid substances often prescribed under these practical forms; tables of density relating to the liquids in frequent use; the indications necessary for the choice and use of arcometers and the densimeter; the points of fusion, the boiling points, the solubility of substances in common use. A table of the equivalents of the simple bodies in use in medicine, whether by themselves or in their combinations, terminates this first part."

The great utility of the preliminary information given in the *Codex* is evident from the foregoing enumeration.

The substances constituting the Materia Medica are arranged in alphabetical order. Of the more important, as opium and cinchona, copious descriptions are given, extending in the case of the former to a page, and in that of the latter to three and a half pages of this division of the work, which latter is subdivided into two sections,

one containing substances obtained directly from vegetables or animals, the other those derived from minerals and chemical products.

In the *Pharmacopœia*, properly so called, on the contrary, the methodical order has been followed:—

"The reasons for this decision need scarcely be specified. We find on each page, in fact, preparations advantageously brought together, because their nature admits of it, though they differ in name; an alphabetical arrangement would have separated them, thus requiring the useless repetition of certain details, or obliging the pharmacien to search in three or four distinct and distant places in the *Codex* for information indispensable to the execution of a single formula."

The *Pharmacopœia* again includes two classes of products, one comprising simple medicines supplied by chemistry, the other medicines produced by the mixture of different matters.

Fourteen chapters are devoted to simple bodies, acids, oxides, alkalies, ammonia, chlorides, &c., and mineral salts; eight to acids, &c.; one to artificial mineral waters; fifty-one to various Galenical preparations, &c.; while the seventy-fifth and last chapter contains formulæ in common use abroad, little or not at all employed in France.

Lastly, towards the end of the work, we have extracts from the laws and regulations relating to the practice of pharmacy; laws and ordinances bearing on the sale of poisons; decree relating to secret remedies; royal ordinance respecting the manufacture and sale of artificial mineral waters and of gaseous waters.

Having thus described the general arrangement of the volume, we shall next direct attention to such of the preparations as may strike us, in running rapidly through its pages, as presenting some peculiarity. A remarkable feature is the immense number of syrups, the enumeration of which, in the French index, occupies three columns. It seems scarcely necessary to give directions for the preparation of "pulvis sacchari." Cherry juice, gooseberry juice, raspberry juice, oil of eggs, appear to be rather out of place in a pharmacopœia. We have, of course, an extensive chapter of "ptisans," to which are appended four lemonades and a formula for *petit-lait*. Our suspicion that the well-known culinary talents of the French were predominating culminated on reaching Chapter XXX., for though we are told that it is to be restricted to soups destined to fulfil a medical indication, we find that the

category embraces veal broth (two varieties, meat and light) chicken broth, frog! and turtle soup!! and—defend us from such physic, or dietetics, whichever it may be—snail broth. To the English mind it certainly appears strange to see such matters occupying the serious consideration of men like Dumas, Rayer, Bouchardat, Grisolle, Regnauld, Tardieu, Wurtz, Bussy, Chatin, Guibourt, Le Canu, Buignet, Gobley, Mayet, Mialhe, Schaeuffele, Petit, and Mourier, many of whose names are well known in science. The vulnerary tincture, which is dignified with an asterisk, the mark of such preparations and drugs as are to be kept in all pharmacies, contains nineteen ingredients. We have a formula for "English Black Drop," a chapter of ethereal tinctures, a tranquillizing balm also with nineteen ingredients, a useful table of the quantities of extract produced by a given weight of each of a large number of substances therein named; a syrup of snails! which we are told may be made either with the Helix *aspersa* or with the *Limaçons des vignes;* a syrupus de pulmonibus vitulinis compositus, and a syrupus de Artemesia *compositus*, truly compound, containing eighteen ingredients. Of chocolates we have seven, including vanilla, sago, arrow-root, tapioca, Iceland moss, ferruginous, and chocolat de santé. A chapter of very complex electuaries is crowned with the famous Theriaca, with its fifty-nine ingredients, including dried vipers! And this close, as we now are, upon the last third of the nineteenth century. Next come gelées, pates, oleosaccharures, saccharures, tablettes, and pastilles, most of them very sweet and good, and many of them, no doubt, useful. We have *species* amaræ, anthelminticæ, aromaticæ, astringentes, pectorales, carminativæ, thea helvetica (twenty ingredients), and fructus pectorales; tooth powders, sternutatory powder, and *pulvis ad condienda cadavera;* granules of digitaline, arsenious acid, atropia, and strychnia; capsules, "cold cream," and cucumber pomade; papiers emplastiques, medicated baths and pediluvia; glycérés, escharotics, fumigations, and cigarettes.

On the whole, we are disappointed in the *Codex Medicamentarius* of 1866. We regret to see the culinary element so predominant, though this was perhaps to be expected, and is not without its utility. But we regret still more to see some of the absurdities of two or three hundred years ago retained in a work produced by a committee numbering among its members some of the most distinguished cultivators of pharmaceutical science of the present day. At the same time, the *Codex* will be found a most useful book of

reference, both on account of the numerous valuable tables it contains, and of the universal tendency its editors have sought to give it. In fact, in the present day, when, as they observe, international intercourse has so much increased, such a work is indispensable to the British pharmacien. Nevertheless, our conviction is, that the framers of the new edition of the *British Pharmacopœia* will see in the work very much most carefully to avoid, and but little to adopt.

Tetanus.—Eine Physiologische Studie. Von Dr. Johannes Ranke, Privatdocent der Physiologie und Assistent am Physiologischen Institute in München. Leipzig: Verlag von Wilhelm Engelmann, 1865, pp. 468.

Tetanus.—A Physiological Study. By Dr. Johannes Ranke, Lecturer on Physiology, and Assistant in the Physiological Institute in Munich. Leipzig: Engelmann, 1865, pp. 468.

(*Continued from Vol. XLI., page* 409).

In the former part of this review we attempted to trace the progress of the subject up to the time when Dr. Ranke took it up. The author's own researches are divided into three sections:—

1st. On the influence of tetanus (*i. e.* muscular action) on the chemical composition of the muscles.

2nd. On the influence of tetanus on the general consumption of material in the living organism.

3rd. On the chemical arrangements which tend to control muscular action.

It would be quite impossible, however much we should desire it, or however much the importance of the subject may seem to warrant it, to enter at length, in a notice like the present, into the details of Dr. Ranke's investigations. We must be content to say that his methods of research seem to be extremely accurate, and that they are elaborate in the highest degree; many experiments have been undertaken to prove one single fact; a few pages, or even a single table, contain the result of the labour of many days; and although by far the greater part is quite original, yet nothing is omitted of what others have done on the same subject.

At the conclusion of each chapter a summary of results is given;

and we think that, even at the risk of making a bald and dry statement, we shall best give our readers an idea of what Dr. Ranke has accomplished by transcribing some of these results.

The animal tissues, and muscle among others, are, as is well known, very imperfect conductors of electricity. When muscular tissue, in consequence of its action (whether natural or artificial), becomes more or less impregnated with materials resulting from the disintegration or chemical change in its structure, resulting from contraction, its power of conducting electricity becomes notably increased. As a rough qualitative test, therefore, to prove that chemical change of some sort has taken place, the power of conducting electricity becomes one of great delicacy. In some pages, which constitute a brief appendix to his introduction, Dr. Ranke gives some historical observations upon the experiments up to the present time for the determination of the resistance offered by the animal tissues to the passage of the galvanic current. The first chapter of his own researches contain comparative determinations of the resistance offered to the galvanic current in living and dead muscle, and muscle in a state of repose, and which had been tetanized. Previous to Dr. Ranke's researches the only conclusions of any value arrived at were those of Du Bois-Reymond, viz., that the resistance offered by muscle is remarkably diminished by cooking; yet that albumen does not alter its power of resistance in consequence of coagulation.

In the first chapter of his first section the author speaks of the resistance which muscular tissue offers to the passage of the galvanic current in its relation to the chemistry of muscle and of tetanus.

Results are as follows:—

"1st. The loss of the vitality of muscle is found to be allied to a diminution of the resistance which it offers to the passage of galvanism.

"This in mammalia (rabbits) amounts to about one half, and in frogs two-thirds of the original resistance.

"Living muscle conducts about three million times worse than pure quicksilver, and 115 million times worse than pure copper.

"Dead muscle conducts about 1·68 million times worse than quicksilver, and 62 million times worse than copper.

"2nd. This diminution of resistance, which accompanies loss of vitality, depends upon an accumulation of those products, themselves good conductors, which result from the disintegration of the muscular tissue, which is itself a bad conductor, or does not conduct.

"The acid which makes its appearance in muscle at the time that it

loses its vitality plays an important part in the improvement which takes place in its conducting power.

"3rd. The diminished power of resistance offered by muscle which has been cooked, as Du Bois-Reymond found, is explicable in the same way; as is also the diminution of resistance which, according to Du Bois-Reymond's discovery, accompanies muscular contraction.

"4th. The diminution of resistance which accompanies loss of vitality is much less in muscles which have previously been submitted to exhausting muscular contraction than in those which have been in a condition of repose. During *rigor mortis* the amount of disintegrated muscular tissue is notably diminished by tetanic spasms having been previously excited.

"5th. The diminution of resistance, during the loss of vitality in muscle, and the amount of disintegrated material in *rigor mortis* is liable to very remarkable individual variations.

"6th. As is also the quantity of the destructible material lost in consequence of tetanus."

Although requiring a method of research quite different from the foregoing, yet the results of the second chapter, on the water contained in muscle, are hardly less interesting.

Results:—

"1st. Tetanus is always accompanied by a diminished per centage of the solid materials of muscle, with which there is a corresponding increase of the per centage of the water contained in this tissue.

"2nd. Slight muscular action is allied with slight increase of the water; action of muscle and increase of the water contained in its tissue are in exact relation.

"3rd. The less the quantity of water previously contained in muscle while in a condition of repose the greater is the increase of water as the result of tetanus.

"The greater the per centage of solid matter contained in muscle during repose so much the greater is its capability of doing work.

"4th. The per centage of the solid material of muscle increases in man along with the capability of performing work, from youth up to vigorous manhood; from this on to advanced age there is a corresponding diminution.

"The time when the water contained in muscle is at its minimum corresponds with the time when the muscle has the greatest capability of performing work.

"5th. After prolonged periods of insufficient nourishment we find that a diminution of the solid material of muscle goes hand in hand with a

corresponding diminution in the solid constituents of the central organs of the nervous system.

"6th. In special organs the muscles which are subject to most exertion are the richest in water. The muscular structure of the heart is the richest in water."

These extracts are enough to show something of the general plan followed in the work, but nothing short of perusal of the book itself can give any accurate notice of the methods of research followed in obtaining these results.

We shall now briefly enumerate some of the practical conclusions arrived at by Dr. Ranke.

When removed from the body, muscles which have been tetanized show no perceptible increase of the water contained in them; the blood of the animal is, however, affected by tetanization of the muscles; it becomes poorer in water and richer in solid materials, in fact, we find in the blood the matters which muscles lose by tetanization. The water extractive matters are diminished in muscle which has been tetanized while the circulation has been still maintained in it; even, however, when the influence of circulation is excluded there is a tolerably marked diminution of the water extracts in muscle which has been tetanized. In this latter case both Helmholtz and Ranke have pointed out the important fact that the diminution of the water extracts corresponds with an equally great increase of the alcoholic extracts.

Muscle, after it has been removed from the influence of the circulation is found to possess a tendency to the formation of acid, and there appears to be a fixed and unalterable maximum of the amount of acid capable of being formed; this maximum is found to be lowered in consequence of the tetanization of the living animal. Muscle which has been tetanized produces less acid than muscle which has been at rest; in fact the tetanization of muscle seems to consume the acid-forming matter.

Valentin and others had observed that muscle, during tetanization, gives to the atmosphere more carbonic acid than when in a condition of repose; and Valentin further found that muscle, after the cessation of its irritability, gives off carbonic acid and takes up oxygen; to this Ranke has added the fact that a diminution in the amount of carbonic acid given off after the death of the muscle follows when the muscle has been previously tetanized.

Chapters VII. and VIII. are devoted to a comparative determination of the amount of sugar and of fat contained in muscle which has been in action through tetanization and in a condition of repose. The results will have a great interest for those who are engaged in the consideration of the pathological condition connected with diabetes and fatty degenerations.

Dr. Ranke confirms the statement of Meissner as to the occurrence in muscle of a true sugar capable of undergoing fermentation. He warns experimenters, however, that there exist in decoctions of muscle other matters besides sugar which are capable of reducing the oxide of copper of the cupro-potassic test solutions; kreatine, and especially kreatinine, possess this property to a certain degree.

Muscle, he finds, is richer in sugar after it has been tetanized than it was before when in a state of repose; and the increase of sugar resulting from tetanus is something very notable. The liver has no influence on the increase of sugar during tetanus. Sugar originates in the muscular substance itself during tetanic action of the muscle. The amount contained in the frog-muscle, during repose, amounts to 0·58 per mill.; that in muscle which has been tetanized to nearly 1 per mill. (0.93) of the dry muscular substance.

Five experiments agree in the result that tetanization of muscle causes an increase in the normal amount of fat present in the muscle; this fat must have been formed from the muscular structure itself.

The dry residue of muscles which have been at rest and of those which have been tetanized show no appreciable difference in their nitrogenous contents; these on an average amount to 14·4%.

The quantity of albumen, however, in muscle is diminished by the action of tetanization; and this is true not only for the albumen which is soluble in water, but for the total quantity of it which the muscle contains.

The second section of Dr. Ranke's work, which treats of the influence of muscular action on the general consumption of material in the living organism, and the elimination of the material consumed, has a great interest for physiologists at the present time, when this obscure and difficult subject is attracting the notice of so many. Whether, according to the views of Lehmann, there is usually going on in the animal economy a "luxus consumption," *i. e.*, a conversion of albuminoid matter into urea in the blood before tissue-formation has taken place, or whether there be

sufficient potential energy in the nitrogenous tissues and in the oxygen required for their transformation to account for the dynamical actions of the living frame; or whether, in short, the excretion of urea is a true and precise expression of the amount of work done in the organism, are among the fundamental questions in physiology—questions upon the right answers to which great theories stand or fall. All observations, therefore, bearing upon the subject which can be relied upon as accurate have a great value.

Dr. Ranke's researches on this head embrace the following topics:—

1stly. Some of the relations existing between the blood and muscular work.

2ndly. On the daily elimination of carbon and of nitrogen from the human organism when sufficient nutriment is given, and the muscular system is in a condition of repose.

3rdly. On the daily elimination of carbon and nitrogen from the human organism under varying conditions of nourishment (want of food, meat diet, non-nitrogenous diet), combined with repose of the muscular system.

4thly. Of the eliminations which take from the animal organism under the influence of muscular work.

The results of the second and third chapters of this section of his work Dr. Ranke has already published in Reichert's and Du Bois-Reymond's *Archiv.* for 1861, p. 311. His experiments have been conducted with the aid of that elaborate apparatus which has made Professors Bischoff, Voit, and Pettenkofer so famous, while the experiments detailed in the last chapter of this section have been carried on in the laboratory of Professor Liebig.

Dr. Ranke finds that it is possible, with a certain alimentation (under conditions already established for the carnivora by Bischoff and Voit), so to regulate the elimination of nitrogen from the system, that not less nitrogen shall be carried away from the system in the excreta (urine and feces) in twenty-four hours than is ingested during the same period in the food. He has proved, with regard to man, the proposition already demonstrated for the carnivora by Bischoff and Voit, that equilibrium of the nitrogenous income and expenditure first takes place in man when the consumption, not only of nitrogen but of carbon also, during the time of experiment is completely covered. With the proportions of carbon and nitrogen in the food the excretion of nitrogen varies so within

certain limits, that with a surplus supply of carbon the excretion of nitrogen diminishes. The direct estimation of carbon in Pettenkofer's apparatus gave for one day of experiment (during which, according to Dr. Ranke, equilibrium between the supply and expenditure of nitrogen had occurred) the weight of 207 grammes of carbon as the amount eliminated in the expired air in twenty-four hours. It does not appear that any constant proportion of nitrogen and carbon in the food is required for the attainment of a state of equilibrium between the food and excreta.

As regards the effects found to result in man from varieties of diet, want of food, &c., the facts observed harmonize very closely with those already discovered by Professors Bischoff and Voit in the case of their well-known "*hund*," which has done such good service for science.

The third section of Dr. Ranke's book contains a great number of very beautiful experiments, which are, so far as we know, quite original, and are certainly in the highest degree interesting. That the capability which living muscle has of exercising certain functions may be maintained by the injection of oxygenated blood through the vessels after the part has been removed from the body is well known. Blood, however, is a fluid containing so many ingredients that it is impossible to surmise which of its many components may be the more active in maintaining this capability of action in muscle tissue. Dr. Ranke's experiments consist in injecting through the vessels of muscles less compound fluids, and investigating the condition of the muscle as regards its capability of contracting. In this way he has investigated the effects on muscle of lactic acid, kreatine, kreatinine, sugar, and carbonic acid. He has obtained the following results:—

"The capability which muscle has of exercising its functions depends for its strength upon the presence or absence of certain matters formed in the muscle itself by the decomposition of the muscular tissue.

"The greater the quantity of the accumulated products of decomposition in the muscle the less is the capability of the latter for discharging its functions.

"The sugar, however, which accumulates in tetanized muscle has no exhausting effect upon the muscle, nor does sugar exercise an influence upon the system at large.

"Indirectly sugar may have some effect, by giving rise to the development of lactic acid.

"Kreatinine and carbonic acid are circumstanced very similarly to

sugar. Both substances have rather slight influence upon the muscular tissue, and the peripheral nervous system connected therewith.

"Both somewhat depress the vital properties of muscle and of the peripheral nerves, but only in a very unimportant manner.

"As to kreatinine it is probable that instead of an exhausting influence, lessening the capability of the muscle, it maintains or restores the latter by neutralizing the lactic acid accumulated in the muscle.

"The action of the carbonic acid, which is so slight on the muscle, and also on the peripheral nervous system, is proportionally more violent on the nervous central organs in the spinal cord and brain. The final effect of the accumulation of carbonic acid in the system is a paralysis of the nervous central organs.

"Quite different are the results of investigation with respect to *lactic acid* and *kreatine*. These are to the muscle exhausting matters. At the same time we observe that they act in an opposite manner on the peripheral nervous system; they elevate the excitability of the muscular nerves.

"An additional fact, experimentally proved with respect to the action of kreatine and lactic acid, is, that both the substances in question are muscular stimulants. The muscle contracts when it is brought into contact with these bodies.

"The idea suggests itself that having ascertained that the products of decomposition of the muscular substance—lactic acid and kreatine—are muscular stimulants, we are brought nearer to the solution of the problem of the proximate cause of the production of muscular contraction.

"Muscle, under the influence of the nervous system, itself produces, by the decomposition of its own substance, matters which cause it to contract.

"The simple removal of the exhausting matters from the muscle restores the normal vital properties of the latter. If lactic acid alone has acted as the exhausting substance, neutralisation of the acid by carbonate of soda produces the same effect."

In concluding this very imperfect notice of a work which, as we have already said, places its author in the foremost rank among physiologists, we may be permitted to transcribe, *in extenso*, the final chapter. We earnestly recommend the book to our readers, as it is only by a careful perusal of its details that one can judge of the accuracy of the conclusions arrived at; the chapter, however, which we here transcribe gives in a short space an epitome of the views and generalizations of the author, and shows not only the object of the work, but how far that object has been attained:—

"In conclusion, we have to take a rapid glance at the course and results of our investigation.

"The reader will recollect that we commenced the experimental investigation in question under the impression that the well-authenticated results of inquiry as to the influence of tetanus on the metamorphoses of matter of the system hitherto obtained, and at the same time the views thence derived as to the production of muscular power, led to an apparently irreconcilable discrepancy.

"On the one hand it was established by the researches of the most distinguished investigators, as Liebig, Helmholtz, Du Bois-Reymond, and others, that tetanus of muscle was connected with certain demonstrable changes of its substance, all indicative of a consumption of muscular matters by muscular action, and thereby leading necessarily to the inference, that the source of the muscular power was to be sought in that consumption, in that decomposition or oxidation of the muscular matters, and therefore in the force thereby rendered free and available.

"On the other hand the remarkable investigations of Th. L. W. Bischoff and C. Voit upon the nutrition of the carnivora had decidedly and incontestably demonstrated that the conditions of metamorphosis of tissue, the oxidation of matter of the animal organism, are dependent, not on premises to be arbitrarily assigned, but simply on the amount of the nutritious material laid up in the body, and its qualitative composition. To this result of the investigation the experiments of C. Voit had further afforded the certain and direct proof, that the excretion of urea could not be increased by muscular work.

"From these latter researches it follows, with all possible certainty, that in the material laid up in the system the decompositions cannot be arbitrarily increased, but that they take place only in consequence of internal causes.

"The oxidations and metamorphoses of matter which we see proceeding in the organism, and in which alone we can seek the source of the development of power in the animal system, are independent of the use of these mechanical powers in functions without the system, they are not increased thereby.

"We see at the first glance that these contradictory results, which on the one hand clearly demonstrate a consumption of matter through muscular work and tetanus, but on the other prove the independence of the aggregate changes in the system for the production of muscular work, may perhaps be explained by assuming, that in considering a longer period of time, as was the case in the above-mentioned experiments of metamorphosis of matter, such an independence may exhibit itself, but only because the decomposition of matter, increased during muscular action, follows directly a diminution in its energy corresponding to the increase. As science had accustomed itself to consider the

excretions of the system as a measure of the metamorphoses of matter in it, the question appeared to be: may we not perhaps, notwithstanding that on the whole the excretion of nitrogen from the body is not increased by the production of muscular work, in considering as short periods as possible, demonstrate an increase of the excretions corresponding to the production of energy.

"If following upon such a supposed increase in the bodily excretions a corresponding diminution were demonstrable, an accordance of the two results in a simple manner would thus have become possible. If on the one hand the origin ot muscular power were demonstrated in a simple mechanical manner, on the other the second proposition would also be illustrated, that the magnitude of the metamorphoses of matter and oxidations, and, therefore, also the magnitude of the power, which in a longer period, is developed by the organism, are independent of the external work performed during this period.

"We entered on the investigation. It was easy, by direct examination of muscle, partly to confirm the old observations of the consumption of matter in muscle; indeed we succeeded in discovering a tolerable series of new facts, explicable solely by this consumption. We, moreover, found that with the increase of the consumption of muscular matters in consequence of tetanus a number of facts pointed to a change in the direction of the chemical decompositions in muscle during the period of its activity. We also observed that the metamorphoses of matter during the tetanus, on which the development of the muscular power depends, take place only within the muscle itself, so that we are constrained to consider the muscle not only as a conducting medium of a force arising without it in the performance of work, but also as the substance oxidised and metamorphosed in the production of the work.

"Thus one side of the problem, the proof that muscular work depends on the forces of the muscular substances set free and rendered available by increased metamorphosis of matter, was satisfactorily solved. Even though we are not yet in a position to measure these forces, so set free and rendered available in tetanus or muscular work by the increased decomposition of the matters of the muscle, and quantitatively to determine their accordance with the amount of work produced, the qualitative demonstration is sufficient, that an increase of the forces set free actually takes place, which may be looked upon as the basis of the production of work.

"We were thus enabled to turn to the second part of our problem, the solution of the apparent contradiction resulting from the determinations of the excretion of urea in muscular action.

"The problem, as we had above propounded it, seemed capable of simple solution. It is true that for this purpose we had, as the observations seemed to apply only to man, to make a tedious and troublesome

preliminary investigation, in order to establish the fact that results obtained in man are comparable with those obtained in the carnivora. The demonstration proved satisfactory; we had recourse to the particular experiments, which should, in considering shorter periods of excretion, establish the existence of an increase of the excretion of nitrogen in the urine proportional to the production of work. How great was our amazement to find that, notwithstanding the increased metamorphosis of muscle in tetanus, no such corresponding increase was demonstrable in the nitrogenous excretions in the urine. There were certainly changes in the excretion of urea in consequence of tetanus, but these were, notwithstanding the similarity of the work done, not comparable with one another. The same result, which was demonstrated by C. Voit in so striking a manner for longer periods of investigation, was likewise obtained, though with some modifications, in considering very short periods of time.

"It thence appeared strikingly, that the excretion of urea is not capable of affording a faithful representation of the slight variations of the metamorphosis of matter in the organism, that in it only the greater features of the same are exhibited; for manifestly actually existing synonymous changes of metamorphosis of tissue were not in a position to yield an equivalent result in reference to this excretion.

"There was an *irregular* slight increase of the excretion of urea, upon which a period of diminution supervened.

"Estimations of the increase of the yield of carbonic acid occurring under the influence of muscular work were also undertaken. They afforded a result similar to that of the determination of the urea. In the increase of carbonic acid also it is impossible to discover a direct connexion between it and the muscular work produced. Indeed in the excretion of carbonic acid during work as well as in that of urea, a diminution may take place instead of the expected increase which diminution in the one case as in the other is followed, in the period of rest subsequent to the production of work, by an increase lasting for a period of variable duration.

"For the excretion of carbonic acid also C. Voit's observation on that of urea seems to show, that in the consideration of longer periods the excretion is not increased by muscular work, that therefore on the whole the processes of decomposition and oxidation, on which this excretion depends, are independent of and uninfluenced by the work performed. Still these periods appear to be longer than they showed themselves to be with reference to the excretion of urea.

"Thus, then, my experiments, as well as the certainly much more comprehensive ones of Bischoff and Voit, prove that the magnitude of the metamorphosis of matter, and at the same time the amount of power set free and rendered available in the animal system during a longer

period, are not dependent on arbitrary influences, as, for example, muscular action; but that in this case we have before us a function of the organism almost entirely independent of external influences. Indeed, my experiments showed even with respect to the excretion of urea, that tolerably short periods of time, as an hour, are sufficient almost completely to remove an existing change in their results.

"No other solution remained to us then, than the assumption, that in *very short* spaces of time a compensating process must take place within the muscle, whereby the changes induced by muscular action in the conditions of metamorphosis may be almost completely counter-balanced. But how are we to imagine this compensating process? Wherein are we to find the basis of a limitation of the decompositions in working muscle?

"On the one hand we find an increase, on the other a diminution of the muscular decompositions, the one during, the other after the production of work in the muscles. It is evident that both processes—the increase and the diminution—appear equally inexplicable.

"I was so fortunate as almost completely to solve this enigma. We found in the occurrence of lactic acid and kreatine in the muscle the foundation of both apparently irreconcileable facts.

"These substances are not only very powerful muscular stimulants, and we may well suppose that the occurrence of muscular action is due primarily to their stimulating operation; they also elevate the nervous excitability, so that under their primary action an impulse proceeding from the nervous central organs must produce augmented developments in the nerves. But while they primarily and in smaller quantities are capable of increasing the operations of the muscles and nerves, they subsequently gradually diminish the same by increased accumulation, until they have at last completely annihilated them. Thus this observation gave us reason to show, how with and in consequence of muscular action, which notoriously proceeds with accumulation of the two matters mentioned, a stage of increase of decompositions—elevated capability of action—may be followed by a stage of diminution—fatigue, incapability of action.

"I further succeeded in demonstrating that the chemical bodies mentioned produce no definitive alteration of the muscle by their presence, but that their effects may be again destroyed by their simple removal from the muscular juice by washing out and neutralisation of the acid. It was obvious that we had thus discovered the cause of the restoration of the fatigued muscles—lactic acid and creatin are partly washed out of the muscle by blood and lymph, partly are they rendered uninjurious in consequence of the neutralisation of the lactic acid by these alkaline fluids.

"But the muscles, free from blood and lymph, exhibit also outside the system a power of recovery. Sarokow's observation, that in tetanus the

strongly basic kreatinine is formed from kreatine, was capable of explaining this phenomenon also. Kreatinine is almost without action on muscles and nerves. When therefore a part of the kreatine is changed into kreatinine, the newly formed kreatinine in virtue of its basic properties, serves to neutralise the acid. Direct experiment confirmed this *à priori* assumption.

"We had thus discovered the means of restraint; but after this important advance the further problem remained: to investigate the proper ground of their action.

"We succeeded in showing that the electro-motor power of the muscle is arrested under the influence of the fatiguing matters, that with the greater accumulation of lactic acid and kreatine it disappears, and that it may be reproduced by the subsequent removal of these principles. As we are constrained to consider the mode of occurrence of the oxidation of the muscle as influenced by the strength of the electrical currents circulating in it, this observation gave us indications as to the mode in which the fatiguing substances may produce a change in the extent and direction of the oxidations and decompositions in the muscle.

"Experiments instituted according to Schönbein's process on the action of the fatiguing matters on superoxide of hydrogen, threw still more direct light upon this action. We observed that present in small quantities, they are capable of forming an excess of ozone, but that in more considerable quantities they employ all the ozone formed in another way, in their own decomposition (?). These experiments show clearly how they, present in smaller quantities in muscle, may primarily increase its oxidations, as they prepare active oxygen for it, but secondarily in larger quantities, by withdrawing all the ozone formed from it, are capable of wholly annihilating the oxidations.

"The observations on the action of the fatiguing matters on the fermentation of saccharine fluids are in perfect accordance with these results just mentioned.

"I thus close the present investigation. I have succeeded in solving, as I hope satisfactorily, apparent experimental contradictions. *Notwithstanding that on the whole the bulk of the oxidations and decompositions in the animal organism owe their occurrence exclusively to the decomposable amount of matter at the same time present therein, the forces freely expended in muscular work are supplied by a momentarily increased oxidation or decomposition taking place within the muscle, whose apparently necessary effects on an increase of the excretions of the system are counteracted by recognized, and in their actions, intelligible restrictive arrangements.*"

Surgical Experiences:—The Substance of Clinical Lectures. By SAMUEL SOLLY, F.R.S. London: R. Hardwicke. 1865. 8vo., pp. 656.

PERHAPS that which we have most to deplore, on reading of the death of any of our great medical or surgical authorities, is the conviction of the vast mine of *experience* that on all such occasions must have been lost to the public and our profession. No matter how industrious or how accurate in revealing his observations, an unknown quantity of invaluable experience disappears from the service of suffering humanity on the occasion of the death of such a man; a quantity that has to be laboriously reaccumulated by his successor only to be again lost on his departure from amongst his fellow-labourers. This is one of the serious obstacles to the continued advancement of our profession as a science; to a certain point it may be advanced by each successive labourer, but to leave to his successor as a legacy his accumulated wealth of, as it were, intuitive experience is placed beyond the reach of poor finite humanity; and in this way our profession seems to have allotted to it a task in some respects resembling that of Sisyphus. How much more precious than jewels, money, or lands, would be the legacy to a laborious, well-educated, intelligent surgeon, on the part of such a man as Brodie or Crampton, of the experience derived from a long life's accurate observation of disease in all its Protean forms! How impracticable it is for such men to give expression, either in words or in writing, to the intuitive perceptions which such long-continued experience has eventually yielded them! and how grateful should we not feel to those master minds in our profession, who, sacrificing all considerations of self-indulgence, laboriously toil to place on record, for our instruction, the results of their experience derived from years of patient and long-continued observations of the many and intricate medical problems that have been submitted for their consideration and solution! Such a work is the present emanation from the pen of the distinguished senior surgeon of St. Thomas's Hospital, a gentleman who, years since, had succeeded in inscribing his name honourably amongst those whose literary labours had placed our profession under obligations to them by his classical monograph on the *Anatomy of the Brain.*

Mr. Solly's work is composed of a series of lectures, fifty-four in

number, in which are recorded with more or less detail, his practical experience on some of the most important medical and surgical affections of the human frame. Amongst these may be specially noticed the lectures on Diseases of the Spine—Injuries of the Head—Injuries of the Head and Spinal Cord—Scrivener's Palsy—Diseases and Injuries of Joints—Lithotomy—Stricture-Hernia. Mr. Solly by no means pretends that the reader will find in his book exhaustive treatises upon all, or indeed, any one of these subjects; quite the contrary; but he will find what is far more valuable to the busy practitioner, shrewd practical remarks upon many of the most important subjects in medicine and surgery, illustrated with cases bearing upon the subject discussed, in the treatment of which can be easily recognized a master's hand. These are Mr. Solly's own observations upon this subject:—

"I here bring my labours for the present to a close. The form in which I have presented them to the public, but more especially to my friends and former pupils, will, I hope, recall the happy days of hospital pupilage. As clinical lectures, they profess to relate to nothing but that which concerns bedside practice, and the immediate application of the leading principles of surgery. They are, therefore, imperfect, because they do not go into all those details which belong exclusively to the regular course of lectures delivered in the schools. On this account it must be taken for granted that they are chiefly addressed to such as are already in some degree experienced in their profession, and that the beginner, while he cannot fail to gain an insight into the nature of the subjects he will necessarily have to handle, will, nevertheless, discover that he has yet much to learn before he can enter into the spirit and fully appreciate the value of the lessons he might otherwise gather from them. Those who are already engaged in the turmoil of practice will, I believe, agree with me, that it is pleasant in after years to refresh our memories by going back to the events in which we took our parts; to recover something from the lapse of time; to compare the present with the past; to live over again more than a quarter of a century—*grande mortalis ævi spatium;* and, in fine, to communicate to others what we know and think, before the promptings of ambition have ceased to lure us into the expensive luxury of print."

We have already stated that we value these lectures as being the record of the experience of a sound medical practitioner, who has had at his disposal great opportunities, of which he has fully availed himself. It strikes us that, at the present moment, when we fancy that we have witnessed rather a contempt for the principles there

enunciated, that we may, perhaps with advantage, reproduce the following expression of his experience upon a question of great importance in some of our surgical operations:—

"In some cases of amputation, the femoral vein bleeds so profusely that it is absolutely necessary to tie it. This profuse venous hemorrhage generally occurs in feeble subjects long wasted by disease. The vein dilates under the upward column, the valves become useless, and the regurgitation is fearful. But do not think, gentlemen, that it is a matter of light importance, whether the vein is tied or not. All the older surgeons of the present day held it to be a very dangerous practice; and I am convinced that that opinion was not lightly embraced, but was the result of observations on the serious mischief following this step. In modern times it has been the fashion to assert that there is no danger whatever in applying a ligature to a vein. My own opinion is, that both opinions are in the extreme. I can state, from the experience of more than thirty years in this large hospital, that veins may be tied with impunity; but I am also bound to add, that I have seen phlebitis follow the use of the ligature, and a fatal result the sequence, if not the consequence, of the practice.

"Indeed, I believe this very case is an illustration of the mischief which sometimes ensues from it.

"It is quite true that we found sufficient visceral disease to account for this poor fellow's death, without being obliged to look at the state of the veins to explain it; and it is also true that phlebitis and pyemia occur in subjects when no vein has been ligatured. Still, it is my duty to call your attention to all the facts of the case, that they may be stored by you, and compared with the other facts you may be able to obtain on this subject during your sojourn in this Borough of Southwark; and I must again repeat, that a ligature should not be put on a vein unless the hemorrhage from that vein is so great as to endanger the safety of your patient."

Mr. Solly's observations upon stricture, whilst by no means exhaustive of the subject, are full of practical value; but, perhaps, none of them are of greater value than these contained in the following extract. Too often have we seen all but irreparable mischief follow the neglect of the principles here enunciated; and fain would we impress their importance upon the minds of all who venture to undertake the management of what frequently prove the most difficult cases to treat in the range of surgery:—

"There is another thing to be remembered in the treatment of stricture: never be ashamed to leave the bedside of the patient without succeeding

in passing a bougie. The late Mr. Copland, who was as sound and practical a surgeon as any in his day, said to a patient, who afterwards came under my care, with a very irritable stricture and false passage, 'Mind you never place yourself under the care of a surgeon who is afraid to acknowledge that he cannot always succeed in passing a catheter.' I am told that a hospital surgeon, now deceased, passed a sleepless night from vexation if he failed to introduce an instrument into the bladder in the presence of his pupils. Such a man must have made many a false passage. Of such a proceeding you should have the most intense horror. Every good surgeon will fail occasionally in the introduction of a bougie, but no good surgeon ought to make a false passage, though a skilful surgeon will sometimes do it, when his temper or his pride rules his hand instead of his reason and his conscience."

We have selected these passages for our readers' perusal, not that we by any means consider them the most important of Mr. Solly's experiences. The whole work is a satisfactory exposition of his views upon many of the most important topics in medicine and surgery; and we say it advisedly, one without which no medical man's library can be considered complete. Most cordially do we commend it to our readers' notice.

The Antecedents of Cancer. By Chas. H. Moore, F.R.C.S. London: Richards. 1865. 8vo, pp. 53.

Primary Cancer of the Brain. By G. Mackenzie Bacon, M.D. London: Churchill. 1865. 8vo, pp. 27.

On Intra-thoracic Cancer. By John Cockle, M.D. London: Churchill. 1865. 8vo, pp. 159.

On Cancer, its Allies and Counterfeits. By Thos. Weeden Cooke, Surgeon, &c. London: Longmans. 1865. 8vo, pp. 226.

The greater part of the argument which constitutes the subject matter of Mr. Moore's pamphlet, we are informed in the preface, was presented to the British Medical Association at their last annual meeting, at Leamington; and was designedly made brief, and chiefly suggestive, being prepared at the request of the Committee of Council, for the purpose of introducing a discussion

on the subject—"Are there any antecedent conditions influencing the production of cancer?" With a view of precisely limiting the conditions and the period of time to which his enquiries should extend, the author has given the following definition of what he considers should be included in the term cancer:—"It is," he says, "a disease originating in a single spot as one tumour or new growth. In that spot it mixes with the natural tissues, which are destroyed in it, and never reproduced; its component microscopic cells having a greater power of multiplication than those which it displaces, but less of vital stability. The tumour is liable to early degeneration, ulceration, and gangrene; its elementary parts are capable of filtering or being shed into the adjoining healthy tissues, and they may thus be dispersed over a very wide area; they may also be conveyed to parts remote from their place of origin, travelling with the circulation, or sinking by gravitation in the liquids of a serous cavity. Afterwards, when attached in a new site, they manifest a power of growing, as they might have done where they first sprang. In each new place they thus give rise to a separate tumour similar to the first. The disease, so far as we know, is common to men of all nations, all times, and all parts of the world; and it is not limited to the human species, being met with also in the domestic animals, both herbivorous and carnivorous. These qualities and characteristics are not all possessed by every example of the disease; and, happily, the most virulent are the most rare. It is in some cases limited to the part in which it first arose; whilst in others, not apparently dissimilar, it becomes widely dispersed. Every degree of malignancy in this respect is, in fact, observable in different cases; from that which remains for twenty years a local, albeit an advancing disease, to that which is diffused all over the body in as many weeks. The solid growth which slowly creeps over the face, and is followed so closely by ulceration that the substantial disease of the margin rarely exceeds the thickness of an old penny-piece—that growth misnamed an ulcer, which scoops such hideous caverns in the human visage—is no less a cancer than the occult tumour which forms in the male or female mamma, and which, when 'open,' as we term it, has a like ulcer with only a thicker edge. The capacity for diffusion may be possessed by all cancers, though not that of growing when diffused. The rodent cancer, and some of the mammary, may yield up to the absorbents no more of their substance than a fatty tumour, the elements of which, when taken into the

circulation, display no power of reproduction in the next place they come to occupy. As cancer they may never pass out of the vicinity of the original tumour, or reach beyond the glands; yet, in the peculiarities of their local progress and in their common hostility to every indigenous texture, they are equally cancerous with those which can spread to distant regions and luxuriate in dissimilar organs, and which possess sufficient vitality to grow after transplantation, not only from one organ to another, but from one to another animal."

In the succeeding pages the author fully and fairly considers the two sides of the important question of antecedent influences upon the disease which he has thus broadly and comprehensively defined. He conceives that the grounds on which cancer is held to be originally of constitutional nature are these:—Its universal diffusion throughout the body; its occasional commencement in many primary tumours simultaneously; its capacity to grow in various textures; its local recurrence after an operation on the primary tumour; its appearance in internal organs, notwithstanding the extirpation of the primary tumour; its repetition in families (hereditary nature); and its relation to tubercle. The various arguments which have been, or may be adduced, in support of these several grounds of the opinion above stated, are carefully weighed and examined; and the author finally declares that he considers them as affording no sufficient reason for the opinion that the disease in question is originally constitutional. Nay, more; he adduces others which tend to establish the opposite opinion, and which he considers to be more consistent with facts. The reasons for opining that cancer arises as a local disease, independently of a constitutional or general cause, are thus stated:—1. Because of its invariable origin as a single tumour. 2. Because of the manifest dependence of the later tumours upon that first. This opinion is supported by the observed similarity of the morbid substance, in whatever organ or texture it may grow; by the order regulating its dissemination; by the interruption of the progress and dispersion of the disease if the primary tumour be removed; and by the possibility of extirpating that tumour by an early and adequately extensive operation. 3. Because of the remarkable manner in which it is inherited as a local and not as a constitutional peculiarity—a disease of the corresponding organ of plural members of one family—whilst at the same time any inheritance of the disease is uncommon, and that by infants, extremely rare. 4. Because of its preference of the healthiest persons.

The statistical and other evidence adduced in favour of the views entertained by the author are most important and instructive, and will be read with much interest. In recommending this essay as one well worthy of perusal we cannot resist transcribing the final paragraph:—

"There is one conclusion," he says, "from the facts brought forward in this paper, which, though collateral only, and not contemplated at the institution of the enquiry, is yet of too great importance to pass unnoticed. I allude to the valuable argument furnished by them for early operations in cancer, and an argument which corresponds with their comparative success. Whilst, yet, the first tumour has undergone little diffusion, there is a hope of complete extirpation of the disease—a hope which quickly fades away as the tumour grows. I know nothing more distressing in practice than to meet a patient who has carefully concealed this disease till she could bear it no longer, with a refusal to operate on it at all; yet this is the too frequent result of delay on the part of patients in consulting a surgeon, and of early uncertainty as to the nature and probable progress of the disease. The conclusion at which I have arrived may, possibly, be of some advantage, if it only remove from the minds of patients the dread of discredit, which too many suppose to attach to having cancer; for, in fact, the power of generating the disease is rather a proof of a stronger than of a tainted constitution; and, on the whole, its appearance, in one member of a family, is likely to prove the exemption of all the rest. Any pain connected with the avowal may thus be mitigated, and the fullest advantage of treatment may be gained by an earlier recourse to medical aid."

Dr. Mackenzie Bacon, assistant physician to the Cambridgeshire county Asylum for the Insane, having had his attention drawn to the subject of cerebral cancer by his incidentally meeting with a malignant tumour while examining the brain of a lunatic, instituted a series of enquiries into the *post mortem* records of the London hospitals, with a view to determining the frequency of occurrence of this disease. The pamphlet which is now before us furnishes us with the result of his investigations, and will be found a useful and valuable contribution to the pathology of the disease in question, treating as it does of the development of a morbid growth under circumstances and in a situation where no inconsiderable difficulties are opposed to its diagnosis, and where it is often impossible to decide on the nature of the affection till this shall have been revealed by *post mortem* examination.

In the course of his interesting preliminary remarks upon the subdivisions, definitions, nomenclature, and theories relating to cancer, the author illustrates the great value to be attached to the microscope as the most reliable agent in determining the true position of any growth in the catalogue of disease, by a reference to a case related by Dr. Hughes Bennett, who in describing a tumour attached to the tentorium and pressing on the cerebellum, represents it as composed of "an agglomeration of imperfectly formed bodies, usually denominated tubercle corpuscles. From this circumstance, as much as from the occurrence of old tubercular caverns in the lungs, we can have little hesitation in considering its nature to be tuberculous instead of cancerous, as it was first supposed to be by all who saw it. *Many such growths have, doubtless, been recorded as cancer of that organ.*" In collecting the materials for the statistical tables of the several hospitals, the author has made due allowance for the advances made in microscopic studies during later years as compared with the comparatively less valuable nature of observations made twenty years ago; and proposes accordingly to confine his researches to cases observed within ten years. "Taking," he says, "a period of ten years (1854–1863), I have myself searched the *post mortem* records of eight of the chief London hospitals, in order to discover the number revealed by dissection. The different methods pursued at the various hospitals prevent a comparison of the results on any uniform plan, and accordingly the statistics of each institution are given separately."

For further information on the subject the author has searched the museums of the London hospitals; but although most of them have been found to contain specimens of brain cancer no "distinction is made in their description as to the coexistence of similar disease elsewhere in the body." He next refers to published cases, of which, notwithstanding a diligent and continued search through the serial publications of many years past, the Pathological Transactions, and other works bearing on the subject, he has been able to collect but one-and-twenty—a further proof of the great rarity of the affection. The first six cases have been derived from hospital records; the remaining fifteen have been previously published. These twenty-one cases "suggest some points worth notice as regards the sex and age of the patients; for, of the whole number, no less than fourteen were male and only seven females, while four-fifths of the sufferers, from what Cruveilhier called the 'appanage

of advanced age,' were under forty. Of the twenty-one cases, five were under the age of twelve; two between twelve and twenty; four between twenty and thirty; five between thirty and forty; one between forty and fifty; three between fifty and sixty; and one had reached sixty-two."

The treatise on Intra-thoracic Cancer, by Dr. J. Cockle, is divided into two parts, the former of which is devoted altogether to the literature of the subject; this introductory part contains a most elaborate and interesting sketch of the labours of medical writers, beginning from the time of Doctor Thomas Willis, whose *Pharmaceutice Rationalis*, published in 1679, abounds in practical observations upon intra-thoracic diseases. This writer was the earliest observer of a particular sign of cancer of the lungs, which has since arrested very forcibly the attention of many who have carefully watched the disease, viz., a peculiar fetid condition of the breath. The subject is traced consecutively through the works of numerous succeeding authors, down to the fifth and concluding volume of Cruveilhier's book on Pathological Anatomy (1865), which treats exclusively of cancer and cancroïd formations. This historical sketch, which is well worthy of perusal, has been put forward, as we are reminded by the author, "simply with the view of tracing the various progressive steps of science in relation to points of clinical and pathological importance, and of detailing such individual cases as appeared to possess a special value in connexion with the subject." It does not profess to exhaust the subject of intra-thoracic cancer, even in its literary aspect; however, for the convenience of those who may desire to investigate the subject more thoroughly, we find appended to this part of the work a very complete bibliography, containing in fact a list of twenty-seven Latin, fifty-one French, thirty-seven German, three American, one Italian, three Dutch, and forty-three English works, in addition to the references given in the commentaries on the author's own cases in the course of the succeeding part of his treatise.

Part the second consists of contributions to the pathology of intra-thoracic cancer, and appears to be an amplification of former writings which have been already published by the author in several of the journals; in its present shape it is a very complete and valuable treatise on the subject. We would direct the careful attention of our readers particularly to that portion of the work which treats of the diagnosis of intra-thoracic cancer from such affections as chronic pleuritis, aneurism, subacute or chronic pericarditis

chronic or interstitial pneumonia and cirrhosis of the lung, hydatids or simple cysts, and hepatic cancer.

The last work on our list, namely, that of Mr. Thomas Weeden Cooke, opens with a very excellent practical observation, which is quoted from Dr. Hughes Bennett, of Edinburgh:—"If every young practitioner," says the learned professor, "would dedicate his life to the careful elucidation of the natural progress of only one disease, he would do more for medical practice than has been accomplished by centuries of empirical trials of remedies;" and, in accordance with the spirit of this advice, Mr. Cooke appears to have been occupied in improving to the utmost the opportunities which his position as surgeon to the Cancer Hospital has afforded him of studying the characteristic features of this disease, its clinical history and associations, and its treatment. The principal purport of the present work appears to be the establishment of a theory of the origin of cancer. The author looks upon this disease, if we mistake not, as depending upon a vice of original organization, and perfectly independent of any of the acquired habits or circumstances pertaining to our daily life; not that he excludes the operation of such agencies as are usually denominated exciting causes; on the contrary, he admits that many of these have the power of calling the disease into action, "but only at an earlier period than it would have shown itself had there been no local injury to determine and hasten the development." In short, its *seat* may be determined in many cases by exciting causes, but its *source* is hereditary predisposition, and that only. Moreover, the author holds very strong and decided views with regard to the relationship of cancer and tubercle. There is, he says, "in truth, a constitutional cancerous diathesis, as there is a constitutional tubercular diathesis; and as I shall have occasion to show, presently, there are strong grounds for believing that these two depraved conditions of the system have a more intimate relationship than is generally supposed." This relationship is more pointedly indicated further on, where he says:—"For a long time I had looked upon the occasional combination of tubercle and cancer as a curious coincidence, which did not seem to have any practical bearing upon the enquiry as to the nature of cancer. I had seen syphilis and cancer in the same person in rare instances, and the fact of phthisis being a frequent disease in our climate seemed to make it quite natural that occasionally our cancerous patients should also be phthisical. I subsequently noticed that adenoïd tumours nearly always

occur in persons who had phthisical relations; and further, that adenoïd tumours sometimes become cancerous. Stimulated by these associations, I have made diligent enquiry, and I find, in a very large number of instances, that phthisis exists in the families of most cancerous patients, who have not an hereditary tendency to cancer itself; and that a cancerous parent will often beget children that become phthisical. In another part of this treatise I shall give instances in support of this assertion. At present, in order that I may not break the chain of my argument, I must beg the reader to admit for a moment that the fact is as I have stated. If, then, phthisis is found to precede and to follow the evolution of cancer in a very marked degree, and if it be a constant *associate* of tumours which *occasionally* take on cancerous action, *how are we to escape the conclusion* that these two diseased products, cancer and tubercle, are *interchangeable creations?* Thus may we fill up the hiatus wanting in the statistics of the hereditary predisposition to cancer, and thus only may we safely and surely build up the theory of the constitutional origin of cancer."

We must be permitted to say that the conclusion above indicated does not appear to be a legitimate *sequitur*. The author has plainly confounded associated conditions with interchangeable existences, or he would not have considered it a matter of difficulty to "escape the conclusion" to which the above cited sophism appears to lead!

In several of the succeeding chapters, the author describes a variety of cancerous and other diseases which affect the breast, the tongue, the lips, and face, &c. In addition to a number of cases illustrative of diagnostic points attended with doubt or difficulty, the book is embellished with very fine lithographic plates, most carefully coloured with the hand; in fact, the general appearance of the work is quite in accordance with Messrs. Longman's usual good taste.

PART III.

MEDICAL MISCELLANY.

Reports, Retrospects, and Scientific Intelligence.

PROCEEDINGS OF THE PATHOLOGICAL SOCIETY OF DUBLIN.[a]

Dr. M'Dowel, President.

Intra-thoracic Aneurism.—Mr. E. Hamilton exhibited a specimen of intra-thoracic aneurism, taken from the body of a member of the constabulary force who had been in Steveens' Hospital since last November. When admitted he was suffering from intense and urgent dyspnea. He was obliged to sit propped up in bed, and was unable to lie down at night without great suffering being induced. He appeared pale and emaciated, as if he had gone through a protracted course of illness. He had severe palpitations of the heart, and vertigo. On examining him it was found impossible to detect the least pulsation in the wrist at the right side, or even in the arteries of the limb higher up. He suffered from cough, which occurred in paroxysms, and his breathing was stridulous.

The history which he gave of himself was that he had been for a long time ill—in fact, ever since he entered the Constabulary force, and he attributed his ailments to the severe duty he had to perform. He had been several times in the provincial hospitals, and was treated for attacks of pain resembling those of pleurisy.

A careful examination was made of his chest. There was some slight dulness, on percussion, towards the upper part of the right lung. There was no external tumour or any enlargement on which could be founded an accurate diagnosis, but there was a slight elevation of the cartilage of the second rib. It was impossible to detect any bruit, and yet, on pressing the finger above the sternum it came in contact with a tumour, which communicated to it a distinct sense of pulsation. The opinion

[a] These reports are furnished by Dr. R. W. Smith, Secretary to the Society.

was hazarded that the man suffered from aneurism of the arteria innominata, or that portion of the arch from which it springs. He also suffered from pain in the back, and epigastric palpitation; and in the latter region they could detect, by pressure, a distinct *bruit de souffle*. The patient continued in hospital, but nothing could be done except to palliate his sufferings. About three weeks ago he complained of a severe burning pain in the neck below the larynx. This was relieved by the application of sedatives. In about a week before his death he had an attack of hemoptysis. Under the use of acetate of lead it subsided, but returned at intervals, until last Saturday, when, sitting up in bed, he suddenly threw back his head, blood flowed from his mouth, and he expired.

The *post mortem* examination showed a considerable enlargement of the arch of the aorta, from the upper or right portion of which, where the innominata arises, there sprung a pouch which extended over to the origin of the left carotid. This aneurismal tumour pressed on the trachea, and had leaked into it; they found erosion of the cartilages of the trachea in its anterior aspect, and a large clot of blood extending into the bronchial tubes.

They found here an explanation of the absence of the pulse in the wrist. The subclavian artery on the right side was completely closed; there was no passage of blood from the innominata into it; the opening into the carotid was pervious. The heart and its valves were sound. Circumstances did not admit of the examination of the abdominal aorta, but the thoracic aorta was distinctly enlarged just at the place where it passed into the diaphragm.—*February* 3, 1866.

Amyloid Degeneration.—Dr. Purser said:—The specimens which I would bring under the notice of the society consist of the liver, kidneys, and spleen, taken from a body in the dissecting room of the Carmichael School, and presenting, in a remarkable degree, the pathological condition known as amyloid or lardaceous degeneration.

The subject from which they were taken was a man of middle age, dark complexion, and powerful frame. His muscles were remarkably well developed, and the subcutaneous fat was abundant—there was no dropsy. Over the left side of the chest were the marks of recent cupping, and on his forearms various nautical devices were tattooed. He had all the appearance of a man who had died of acute disease: the base of the left lung was consolidated, and the left pleura presented the signs of recent inflammation; in the apex of each lung were the remains of old tubercles, which had undergone the calcareous degeneration. The heart was greatly enlarged, but its valves and muscular tissue were healthy; the liver was very greatly increased in size—the enlargement involving chiefly those parts which lie to the left of the fissure for the gall bladder—there were no morbid adhesions binding it to neighbouring

parts; its surface was in part smooth, and in part marked by deep cicatrices, which all tended to assume a stellate form; its edges were rounded: the gall bladder contained about two drachms of thin, yellow bile. On section, the liver appeared very evidently composed of two substances, one opaque, and of a yellowish-white colour, the other pink and translucent. In some places there were masses of cartilaginous consistence, and of a whitish, semi-transparent, nearly homogeneous appearance; these occupied, for the most part, the inferior surface and thick edge of the liver, and lay invariably near the surface; their limits were pretty well defined; they varied in size from about half an inch to two inches in diameter. The liver was remarkably bloodless, and by pressure or scraping but little juice could be obtained. When thin sections of the organ were examined under the microscope, the opaque portion was seen to consist of cells, rendered dark by the accumulation in them of granules which concealed thin nuclei; by ether much of this was shown to be fat; but even after the action of this reagent the cells remained more opaque and granular than healthy liver cells; the translucent portion was composed of vessels of a peculiar shining appearance, and of cells which had lost their nuclei, and by fusion one with another had become converted into shining flakes, resembling pieces of rough ice. On applying a solution of iodine, the white portion was unaltered, while the translucent portion became deeply stained of a reddish-brown colour, and the parts of which it was composed were clearly seen; the vessels were everywhere thickened, their calibre diminished, and they remained open when cut transversely. The relations of the amyloid and fatty portions of the lobules seemed to vary; in some cases the former occupied the periphery of the lobules, following the distribution of the portal vein, in others it surrounded the intralobular hepatic vein, and in a few instances it occupied the zone of distribution of the hepatic artery; in these cases the lobule consisted of an outer fatty zone, a middle amyloid zone, and a fatty centre. This arrangement was quite exceptional, although Virchow states that it is most frequent. The cartilaginous portions become everywhere of a deep brown colour with iodine; here the vessels seemed to be impervious, and the cells universally degenerated. As well as I could judge, in the liver the degeneration appears to have commenced in the vessels, and spread from them to the glandular structure. There was but little fibrous tissue about the cicatrices, and this gave no reaction with iodine. It is probable that the scars were caused more by atrophy and falling in of liver structure than by effusion and contraction of lymph.

The spleen was somewhat enlarged, but of normal consistence. Under the microscope the vessels were seen thickened and transparent; they stained deeply with iodine, as did also spots of the parenchyma.

Scattered through the spleen were some white bodies, about the size of the head of a small pin; these were composed of cells and nuclei; did not stain with iodine, and were probably enlarged Malpighian bodies; besides these, I failed to discover any Malpighian corpuscles.

The kidneys were large and heavy; the capsule stripped off readily; the surface of the gland was rough and granular, and presented in places a stellate vascularity; on section, the distinction between the cortical and medullary portions was badly marked, and the whole gland substance was much increased in depth. In a good light the Malpighian tufts could be seen as minute shining points in the cortex. On applying iodine to a thin section, the whole arterial system af the kidney became of a dark, reddish-brown colour; the arteries were much diminished in calibre, their walls irregularly thickened, so as to produce an appearance which has been aptly compared to that of the ipecacuan root. Not only were the arteries connected with the Malpighian tufts degenerated, but also the vasa recta. The tubes were in different conditions; some irregularly distended by opaque fatty granules, some filled by a homogeneous transparent material, and some collapsed and empty, while a very few were tolerably healthy; the tubes of the pyramids were for the most part normal. In the kidney the amyloid degeneration seemed not to have extended beyond the vessels; certain it is, that neither the fatty cells nor the translucent masses expressed from the tubes gave any reaction with iodine. There were on each side two renal arteries, one arising in the usual situation, the other smaller, coming off from the aorta about an inch higher up, and giving off the inferior capsular; on both sides the arteries entered the pelvis anterior to the veins, which were single.

The supra-renal capsules were enlarged slightly; the cortex was yellowish-white; the medulla firm, translucent, and of a reddish-grey colour. On the application of iodine numerous red streaks were seen running vertically through the cortex, and also some in the medulla; these all appeared to be blood vessels. The other parts were not examined.

Notwithstanding the absence of any clinical history of this case, it presents some points of interest. How a man whose organs were so much diseased could keep up his *embonpoint* and muscularity, is not a little remarkable, but still more remarkable is the absence of dropsy; for here we had not only such an amount of capillary obstruction as to produce a very considerable hypertrophy of the heart, but also disease of the blood-forming and purifying glands sufficient to induce that condition of blood most prone to give rise to dropsical effusion. This case, furthermore, shows on what a slender thread hangs the life of a person whose excretory organs are diseased; for the pleuro-pneumonia, of which we may fairly suppose he died, was quite insufficient to kill one whose organs generally were healthy.

Amyloid degeneration is almost invariably associated with either syphilis, tuberculosis, or disease of the bones. It is generally believed to be a constitutional affection; but Wilkes records a case where it followed disease of the femur produced by injury in a previously healthy man; and Billroth mentions an instance where it was confined to the lymphatic glands nearest to a diseased humerus. In the present instance the bones were unaffected; there was no evidence, beyond the degenerated viscera, of syphilis, and the tubercles in the lungs had evidently been inactive for years. With regard to the nature of the substance found in the degenerated parts considerable uncertainty still prevails, owing to the difficulty of isolating it perfectly pure. It has been analysed by Friedreich, Schmidt, and others, who always found it to contain nitrogen in considerable quantity; and Dr. R. Macdonnell, who has isolated it in some quantity, failed to convert it into sugar. It hence differs from the physiological amyloid, such as is found in the healthy liver, and in the tissues of the fetus, which, although it gives also a red reaction with iodine, agrees both in chemical constitution and in all its properties with vegetable dextrine. The substance which seems most allied to the pathological amyloid is chitine, which is obtained from the coverings of crustacea, arachnida, and insecta; this, which contains nitrogen, has, after many failures, been converted into sugar by M. Berthelot; this chemist looks on it as a compound body, consisting of a nitrogenous substance allied to albumen, and hydrocarbonaceous substance related to the starch group.—*February* 10, 1866.

Ossification of the Dura Mater.—Dr. Marcus Eustace exhibited a specimen of osseous deposit in the falx cerebri, taken from the body of a gentleman who died in July last, having been two years and three months under the care of the Drs. Eustace, in their private asylum, Hampstead House, Glasnevin.

The case at first was very obscure. About three years before his death he was under the impression that he had disease of the brain, and that he would die suddenly; and the late Dr. Mayne and Dr. Banks, having been consulted, recommended that he should travel. He went to Edinburgh and London, and sought additional advice there, as he suffered at night from occasional faintness; and at both places he received the opinion that there was nothing serious the matter. He soon after showed that he had the fixed idea that he had died on a certain day, and resisted taking food, acting in every way he could consistently with his delusion.

He was brought from London to Dublin; and on further consultation with Drs. Banks, Mayne, and Gordon, it was thought there was some obscure disease of the brain.

There was a slight tendency to paralysis, at this time, on the left side,

which soon partially passed off. He did not take sufficient food, and wished to remain in bed. He was brought to Hampstead House on the 21st of April, 1863; he was then a good deal reduced, and required assistance in walking; had a rapid pulse, and was feverish. Acting in accordance with his delusion that he was dead, he would not acknowledge that he suffered any pain. During the first ten days he had food barely sufficient to support life, and then refused to take any, and it was found necessary to introduce it by the stomach pump. The greatest difficulty was experienced in opening his mouth. The nasal tube, as recommended by Dr. Harrington Tuke, was tried, and on each occasion it appeared to pass into the larynx.

Dr. Mayne was consulted, who tried over and over again to pass the tube, but with the same result, and was perfectly convinced that it was useless to make any further effort to introduce it. It was found that the only means of success was by tiring the masseter muscles by attempts with the handle of a spoon, which caused him to clench his teeth, so that ultimately the muscles became fatigued, and relaxed sufficiently to enable them to open his mouth to pass in the plug.

The stomach pump was used three times a day; the catheter also required to be used, and cold water enemata were given to produce action of the bowels, all of which he resisted with great force.

After four months, during which time this mode of treatment was constantly pursued, from being greatly reduced the patient had increased considerably in flesh; he had riding exercise, as he could not walk, being accompanied by an attendant. He continued to increase in flesh; and one day, seeing one of the servants eating, he said he could eat also; he was in the habit of saying it was a shame to bring a dead man about, and that he ought to be buried, so that his family might get his property, his life being largely insured. He now yielded, and took food freely, but said it was a strange thing for a dead man to eat. He gradually recovered; and after nine months' residence at Hampstead House, he appeared to be perfectly well. He still had the same kind of gait, but walked without difficulty two or three miles daily. His mind appeared to be quite restored; his delusion passed away; and on his friends visiting him, he frequently said, "I am still alive, and my life has been saved by the use of the stomach pump."

One day, while sitting in the drawing-room, he was remarked by the servant to sink, sliding off the chair; he was at once removed to bed, and within a few minutes had a severe epileptic fit, which was repeated throughout that day and night, each half hour. There was great prostration, the pulse 120, the breathing quick, sordes on the teeth, and insensibility. The following day he was something better, but continued to have convulsions every half hour. When they would pass off he would appear in his right mind. While conversing, the convulsions

would come on, draw him up for a moment, and relax again, and he would then continue the conversation precisely where he had left off, apparently unaware of the attack. This continued four days; during that time his head was leeched and blistered, mercury was administered, sedatives were also given, and the catheter was used. On the fourth day a large belladonna plaster was applied along the spine. From that time until three months after he had no convulsion; and whether that was the result of the belladonna plaster, or that the convulsions were on the point of subsiding, cannot be decided. About a fortnight afterwards the delusion that he was dead again took possession of his mind; and after three months he had another attack of epileptic convulsions, which lasted for three days, and passed off like the last; but in this instance belladonna was applied without producing any good effect. Again he recovered, but with partial paralysis of the lower limbs, and he was seldom without twitchings of the muscles of the neck and face; and about eighteen months after he came to the asylum it appeared that he was undergoing a great change for the worse. The spasms were more evident and increased; he took barely sufficient food; he slept but little, requiring draughts of chlorodyne frequently repeated; and in July, 1865, there was a fourth attack. After death the ossified falx cerebri now exhibited was discovered. The brain was perfectly healthy, and was moulded exactly to the nodules of the bony deposit. The spinal marrow and all the other organs were perfectly healthy; there was but little effusion or congestion. The case had been treated as one of reflex epilepsy, and bromide of potash was given all through with marked benefit.—*February* 10, 1866.

Vesical Calculus.—Dr. Fleming said, that the stone he now presented to the society had escaped from the bladder a few hours after the operation of "Lithectasy" had been performed for its removal. The subject of it was a girl, aged eleven years, who had lately applied at the Netterville Institution, complaining of some uneasiness and difficulty in micturition, occasionally amounting to almost complete retention of urine, and often accompanied by a sudden interruption to its current. He was at first not disposed to attach much importance to the statements the child had made, imagining that they might be exaggerated, or were attributable to some intestinal cause, such as ascarides in the rectum, or other irritation in that locality. He ascertained that there was no congenital defect present to account for them. The urine was carefully examined—its reaction and density were natural. It deposited much lithate of ammonia, and numerous crystals of lithic acid, and many of oxalate of lime, especially attracted attention in the microscopical examination. The child was now attacked with painful retention of urine, which required the use of the catheter; and in consequence of its recurrence the child was admitted into the Richmond Hospital, where,

on not a few occasions, the sensation of a calculus striking against a gum elastic or metallic instrument was distinctly felt by Dr. Fleming, and several of the students, especially if the child coughed or cried during the escape of the urine. The capacity of the bladder was remarkably large, often containing a pint and a-half of urine, and often very tolerant of the pressure of such an amount, from the fear the child had of the use of the catheter, in consequence of some difficulty in its introduction, arising from the concealed situation of the orifice of the urethra.

The rational signs of stone were, in a great measure, persistent; the physical were not by any means satisfactory. It was decided to dilatet he urethra to an extent to admit of a careful exploration of the bladder, and a piece of tangle bougie was prepared for the purpose. It was made conical in shape; answered on the scale to about No. 4 or 5; was four inches or so in length; and was curved at its proximal end to prevent its escape into the bladder, and admit of its being properly secured in situ. By previous experiment, this piece of tangle bougie was found to be capable of expanding so as to reach No. 17 on the scale. On the night previous to operation it was passed into the bladder, and properly secured. Under the influence of opiates, the bougie remained tolerably stationary until the following morning, when, in the removal of the child to the operation theatre, it escaped, but yet had effected dilatation to an extent which permitted the passage of Weiss's female urethral dilator with the greatest ease. With the assistance of his colleagues, Drs. Hamilton and Smith, and under chloroform, the dilatations were increased by the ordinary screw movement; and on the removal of the dilators Dr. F. was able to pass his fore-finger freely into the bladder, having had recourse to this expedient at the moment, in consequence of the rapid escape of the urine, which would have been increased if a forceps or scoop had been used. Dr. F. could feel the inner surface of the bladder with care, and it communicated the sensation as if the body of the organ was thrown into longitudinal folds, and the inferior fundus so much deepened that the point of the finger did not satisfactorily reach the mucous surface. No stone could be felt with the finger, nor could the presence of one be detected with a forceps subsequently introduced. The child was removed to bed, and for a short time after the operation suffered from the usual effects of chloroform, such as, some slight delirium and sickness; but these quickly subsided under the uses of mild stimulants.

Urine escaped throughout the day, but some uneasiness was experienced from frequent paroxysms of tenesmus; what escaped resembled small masses of coagulated blood mixed with urine. During his visit, about six hours after the operation, one of these paroxysms occurred when, on separating the labia, he found, in a coagulum which had just passed, the calculus now exhibited; it was nearly spherical in shape, and too large

to pass through No. 17 on the catheter scale; it was rough on the surface, and, when examined with a magnifying glass, its several points, having a crystalline aspect, were seen. According to Dr. Grimshaw, it consisted of oxalates of lime, mixed with a considerable quantity of organic matter. Now the urine escaped, as the little child described it, in large gushes, not easily controlled when the desire to urinate supervened, and with some, but severe, pain. In the intervals no urine escaped involuntarily; during sleep there was some incontinence of urine, and the same when she coughed, or made any such exertion. The sufferings of the child after the operation were very trifling; there was no fever of any moment, neither was there any appreciable amount of local suffering. Within ten days, at her own desire, she was removed home, and improved from day to day; and was able to move about, without annoyance, three weeks from the day of the operation. The bladder is gradually recovering its normal action; incontinence of urine rarely occurs, and then only during sleep; and all former painful sensations have ceased.

The practical interest and importance of this case require no comment. Here the operation of lithectasy, by simply dilating the urethra without any incision, answered all purposes; at the same time it was to be recollected that, from the hemorrhage which occurred, some lacerations must have taken place. Here the question of the presence of any other foreign body but stone was not to be entertained on account of the age of the child. Not the least interesting feature connected with this case, was the nature of the stone, oxalate of lime calculus being comparatively rare in the female.

Dr. F. added, that the great value of the tangle bougie, as a means of dilating the urethra in cases such as the above, can not be exaggerated. It can be easily formed into any shape that may be required, and the amount of the dilatation of which it is capable can be accurately measured previous to its use.—*February* 10, 1866.

Bright's Disease of the Kidney.—Dr. Lyons said the specimens which he now brought before the society presented features of unusual interest, but he could give only an imperfect history of the case. The patient, aged twenty-eight, was admitted on that day week into Jervis-street Hospital with symptoms of a very obscure character. He had a certain amount of unsteadiness in gait and want of confidence in his general movements, with occasional twitchings of the muscles in the extremities. He stated that he had been subject to vomiting for some weeks previously. He (Dr. Lyons) saw the man on the next day, and then noticed something very peculiar about him. He lay in bed, making little or no complaint; vomited two or three times, but yet seemed to have a desire for food; and having been helped to the ordinary dinner of the hospital, he seemed

to partake of it with appetite; but the food was hardly swallowed when it was returned. On examining the abdomen the bladder was found largely distended with water; and on the catheter being passed, 56 ounces of urine was withdrawn. It was noticed that the patient stood at the bed side with a certain unsteadiness of limb, which was partly attributed to the fact that the catheter was then passed for the first time. He had a confused idea in his mind that in consequence of vomiting so much fluid he had no necessity for passing water, and he experienced no inconvenience in consequence of the large quantity of urine that had accumulated in the bladder, nor was he aware of its presence. As long as the patient lived the water had to be drawn off by the catheter; and when examined it was found loaded with albumen, the specific gravity being 1014. The man was rather spare, and there was no dropsical effusion. He did not complain of pain; and the only statement he made of suffering was that of the vomiting, which had existed for some time before, and continued for a short time after his admission into hospital, but for the last two or three days of life there was no vomiting. On a day or two subsequently the patient began to exhibit symptoms of a still more remarkable character. It was now found that there was considerable increase of sensibility in several parts of the body. On attempting to move one of the lower limbs he complained of excessive pain; the soles of the feet were also painful when rubbed; he was able to sit up in bed, and even get out of bed, and made no complaint of suffering of any kind; he had no headache or other symptom that would call attention to the head. His pulse, on admission, was 96, and afterwards sank to 76; it was a full, slow, long, labouring pulse. There was no affection of the lungs, no irregularity in the action of the heart, nor anything observable in the cardiac sounds of an abnormal kind. On the second day before death he lay with his head drawn back, but there was no active muscular retraction or muscular rigidity; the tongue was now dry, brown, and furred, and the pulse 76. Mercurial ointment was now directed to be rubbed in, for at this period a strong impression arose that a certain amount of cerebro-spinal arachnitis was what would most fully explain the phenomena found in the case. The rubbing in of the ointment had to be desisted from on account of the pain which was experienced in the axillæ and the groins. The patient gradually sank, without, so far as he remembered, the development of any further symptoms of a remarkable or unusual kind. Thirty-six ounces of water were drawn off from the bladder on the day before he died, and found to be loaded with albumen. There was not the slightest œdema anywhere.

Dr. L. carefully examined the spinal cord, having made a section with the rachitome; and on opening the cranium and removing the cord and brain together, there was found an extraordinary amount of congestion in all the venous sinuses. A large amount of blood escaped in the operation

of opening the spinal canal, at the lower part of which a considerable amount of serous effusion existed, as well as in the sac of the cerebral arachnoid membrane.

When the abdomen was opened the kidneys were found to be very small, and advanced in Bright's disease. They each weighed not more than two and a-half ounces. The cortical portion was in that state of fatty degeneration which constituted the main element of Bright's disease of the kidneys, but the affection was not developed to the extent which was generally found in connexion with such symptoms as those exhibited in this case. The section of the kidney was examined under the microscope, and found to present a certain amount of fatty deposit in the tubules, but altogether a less considerable amount of fatty degeneration than was commonly seen in cases which had progressed as far as dropsical effusion and uremic poisoning. Thes pleen and liver did not present any unusual appearance.

On opening the pericardium two or three ounces of turbid serum, mixed with flaky lymph, were found, and here and there on the heart there was a slight deposit of lymphy exudation, but nothing like general pericarditis existed. The heart was considerably hypertrophied, and the walls very much thickened, and this without any valvular lesion to account for it. The mitral valves, though rather short in their vertical direction, were still adequate to close the mitral orifice.

In no less than 23 out of 100 cases which had been recorded by Dr. Bright, there was a considerable amount of hypertrophy without valvular lesion to account for it; in 52 of his cases there was hypertrophy of the heart; but a certain number had disease of the mitral valves, and a certain number disease of the aortic valves—23 having hypertrophy without any disease of the valves.

In the lungs there was a well marked example of puckered cicatrix, where tubercle had existed and been healed. The right lung was adherent throughout, but not otherwise affected. On carefully examining the brain and spinal cord for anything that would account for the remarkable hyperesthesia, there was only found a certain amount of congestion on the surface of the brain, and of lymphy opacity, but no free effusion of lymph in any part of the cranium or arachnoid. There was active hyperemia of the cord, but there was no lymphy exudation, neither was there any marked alteration in the substance of the cord, or of the brain. To sum up, there was a certain amount of arachnitis of the cerebral arachnoid, in an early stage, with hyperemia, and a slight amount of lymphy exudation. The spinal arachnoid was in a state of active hyperemia, with a very great venous congestion, and serous effusion. The escape of blood was so great that it was impossible to separate any portion of the serum for further examination.

As before observed, cases of renal disease are often seen going on to a

more extreme degree, so far as symptoms of dropsy and uremic poisoning are concerned, but with the production of a greater amount of renal lesion than in this particular instance.

The state of hyperesthesia was probably due to the hyperemic condition of the arachnoid in the brain and chord. It may be remarked that the patient did not present any symptoms of a tendency to coma, or uremic poisoning, except irritability of the stomach. There was no pain in the head or back; and the man, as he lay in bed, expressed himself free from suffering, except during the last two days, and then only when the hand touched his thighs or the soles of his feet. It was an example of renal lesion producing unusual symptoms, and without any dropsical effusion, unless that in the arachnoid of the brain and cord.

Dr. L. observed that he met, recently, another remarkable case of unusual symptoms occurring in Bright's disease, but the patient had dropsy to a large extent, and extreme headache. He presented this remarkable feature—the impossibility of selecting the proper word to express his ideas. Being asked one morning if he had slept well during the night, he replied that he had "slept about sixpence;" and on another occasion, when asked had he taken breakfast, he said he had "breakfasted on cobblers." This dysphenic condition he had never observed in any other instance of Bright's disease. He thought this case was worthy of being added to the list of unusual cases which it was known presented themselves in various forms in Bright's disease. The absence of dropsy, the peculiar gait, the muscular twitchings, and the hyperesthesia, which were exhibited in this instance, as well as the total absence of dropsy, of headache, and of the more ordinary symptoms of uremic poisoning, rendered it a case of a very unusual character.—*February* 17, 1866.

Separation of the Symphisis Pubis, with Rupture of the Bladder.—Mr. Symes said, that on Monday, the 12th of February, a man, aged forty-five years, fell from the roof of a new chapel, which was being built at Monkstown, a height of forty or fifty feet, and in falling he tumbled across some timber—scaffolding poles—which were projecting from the walls. He did not see the man until eight days after the accident, as he was not brought into hospital until the 20th. His condition was then most lamentable. He was suffering from great desire and inability to pass water, and on examining him he found a large tumour occupying the hypogastrium, and reaching up towards the umbilicus. It was something like a distended bladder, differing, however, from it in not being symmetrical, there being more of it on the right side than on the left. On examining the tumour, he could trace it into the pelvis on the left side, and on the right as far forwards as Poupart's ligament. There was extensive ecchymosis, extending from the right iliac spine down to the pubis; there was also an ecchymosis in the perineum, but he experienced

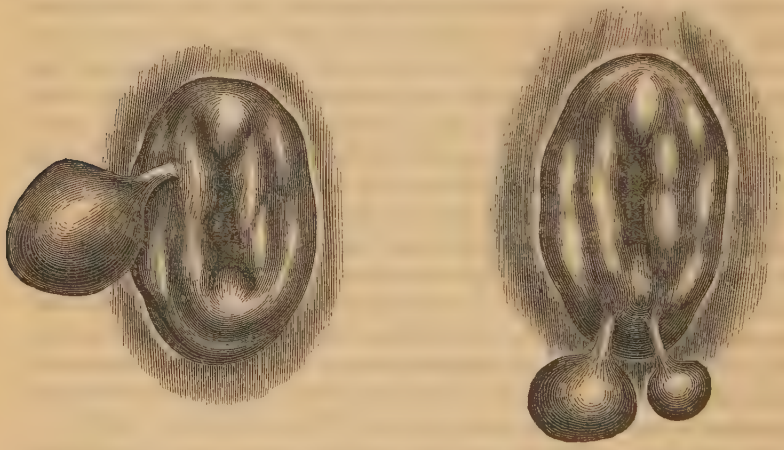
no uneasiness in this situation, and made no complaint when pressure was made there. He kept his thigh semiflexed on the abdomen, and looked with horror on any movement of the limb, so much so, that he was induced to examine him for dislocation of the hip-joint, but found that there was no such lesion; some of his ribs were injured. Just before he saw him the resident pupil had passed a catheter, and drawn off three or four ounces of urine. He (Mr. Symes) then passed the instrument, and succeeded, after a great deal of trouble, in drawing off about two ounces of very fetid urine mixed with blood and pus. The operation occupied about three-quarters of an hour, as he had frequently to clear the eye of the catheter from the clots which filled it, and obstructed the passage of the fluid. The urine came out dribbling, at uncertain times, and generally when least expected. This was followed by no sign of diminution of the tumour. The patient got a large allowance of wine, the usual opiates were administered, and he experienced some slight relief. He would not allow the catheter to remain in the bladder, so that it had to be introduced every four hours. He died on Saturday, the 24th, exactly twelve days after the injury. On the day before his death he could trace a distinctly fluctuating tumour over the right side of the pubis.

At the *post mortem* examination, on cutting through the abdominal muscles above the pubes, there was found a mass of putrescence. On getting into the abdominal cavity a great quantity of fetid urine and blood was met with, enclosed, as it were, in a sort of cyst formed of exuded lymph. This fluid had dissected its way between the peritoneum and the bones. It did not descend into the recto-vesical *cul de sac*. The amount of fluid was considerable, being over a quart. The intestines were matted together in the immediate neighbourhood, and a portion lay in front of the collection of matter, but the small extent of local peritonitis which was caused under these circumstances was remarkable. On examining the bones of the pelvis there was found a wide separation, even to the extent of three-quarters of an inch. At the symphysis pubis the fibro-cartilage had all gone with the left side, the bone being quite bare on the right side. The right os pubis was about half an inch below the level of the left; the sub-pubic ligament and attachment of the triangular fascia had been torn through; this evidently accounted for the great ease with which the catheter could be passed into the bladder. On examining the right sacro-iliac synchondrosis, a patch of effused blood was found beneath the muscles in the neighbourhood; the joint was very movable, a great portion of the anterior ligament having been ruptured. On next directing attention to the bladder, two small rents were found in front, just above the level of the pubis, where the bladder is not covered by peritoneum. Mr. Symes said that a good deal of attention had been lately drawn to the subject of separation of the symphysis pubis with rupture of the bladder. Mr. Fleming, Mr. Hutchinson, of London, and Mr. Hamilton,

in his work on fractures, had collected several instances. This case was remarkable for the small amount of local peritonitis, and for the length of time he lived (twelve days) after receipt of the injury.—*February* 17, 1866.

Polypus of the Rectum.—Dr. Fleming said that he had, on other occasions, brought under the notice of the society cases of diseases of the anus and rectum, both of a non-malignant and of malignant character, and now wished to direct attention to a disease of the rectum of rare occurrence. He referred to polypus of the rectum. It was more frequently met with in children than in persons advanced in life, and hence it required careful investigation on the part of the surgeon. The subject of the present case was a little boy, aged about twelve years, who had been under treatment in the Richmond Hospital for malignant onychia of the great toe. Dr. Fleming was struck by the unfavourable results of the treatment adopted for its cure, and by the remarkably anemic aspect of the boy; when, subsequently, the child accidentally stated that he had piles, and that he had often bleeding during and after defecation. Now, hemorrhoids in children, whether external or internal, were of very rare occurrence. There were, doubtless, diseases in children which were improperly called piles, but these diseases could be distinctly referred to other specific causes, unnecessary here to particularize; and their diagnosis was easy. On examining the anus and rectum in the present case, no disease could be detected by ocular or by digital examination: when, during a sudden attack of prolapsus of the rectum, the appearance of blood on its mucous surface attracted attention; and, on removing the blood, two pedunculated tumours presented themselves, each growing from the front wall of the bowel by a narrow pedicle. These little tumours descended and returned with the prolapsus; they were about the size of a large garden pea, were spherical in shape, highly vascular, and had a solid and consistent feel. The treatment adopted for their removal was as simple as it was effectual; the pedicle of each was snipped across beyond a ligature, which was tied around its root; the surface was then washed over with a solution of the perchloride of iron, rest in the horizontal posture was enjoined, even during the action of the bowels; when, after a week, the normal functions of the parts were fully restored, and the general health was vastly improved. All were familiar with the special localities from which these polypoid growths sprang—such as the ear, the nose, the pharynx, and occasionally from the larynx; nay, more, the orifice of the urethra, both in the male and female, and the lining membranes of the bladder, occasionally gave origin to them. Dr. Fleming took the opportunity of showing an admirrble drawing of this form of polypus growing from the interior of the bladder. The subject of the case was an aged

man, who, after frequently-recurring attacks of hematuria, sank anemic and dropsical. This man had been for a time a patient in Steevens' Hospital, and subsequently in the South Union Hospital, under the late Dr. Mayne; he laboured under the symptoms of the disease, especially violent attacks of hematuria, for many years. The structure of the polypus was fibro-cellular, and obviously it was non-malignant; its shape, situation, and outline have been accurately represented in the accompanying plate. Dr. Fleming alluded to some of those outgrowths



from the prostate gland, which often assumed a pedunculated form, and projected almost as isolated tumours into the bladder; excellent drawings of such were shown, as connected with the intestinal tract. He alluded to a remarkable case which was brought under the notice of the society by Professor Smith, and which was recorded in its *Proceedings*, where a thick pedunculated fleshy growth from the ileum passed into the colon and caused fatal obstruction of the bowel.

In the case of polypus of the rectum now before the society there was no irritability of the bladder; but in another instance, recorded by Dr. Fleming in the *Dublin Hospital Gazette*, the bladder was so irritable as to lead to the suspicion of the existence of a calculus, when, during the operation of sounding, prolapsus of the rectum took place and a large polypoid growth was detected, on the removal of which all uneasiness subsided.—*February* 24, 1866.

Hemiplegia, with Loss of Speech.—Dr. Banks said that on the 19th of February a man, aged twenty-four, was admitted into the Whitworth Hospital. As far as could be ascertained from the proprietor of the hotel in which he had been a porter, he was of regular habits, and not intemperate; he had not been known to be ill before the morning of the 19th. On the preceding evening he had been out, but returned

perfectly sober, and went to bed at his usual time. The following morning he did not appear, and a person going into his room to call him found him sitting up in bed, complaining much of pain in his head. Nevertheless, he got up, and about an hour afterwards he was found in a pantry where he had been at work, lying on his face, and perfectly insensible. On being roused and questioned, he put his hand to his head and attempted to speak; but the person who mentioned these facts to the resident pupil said he mumbled, and it was impossible to make out what he said; he was then brought to the hospital. On being roused and spoken sharply to, he attempted to reply, but he only uttered some disconnected monosyllables; he could not completely protrude his tongue, but he swallowed well, and he passed water voluntarily, even after coming into hospital. He was paralysed on the right side, but it was not complete; the right arm and right leg were paralysed, but he had some power of movement in the right arm. The pupils were equal, and he seemed, on being spoken to to, be intelligent; he made a movement as if he desired to do what was asked. There was a slight paralysis of the face on the right side—that slight and limited paralysis which is sometimes associated with hemiplegia. The heart was examined very carefully; its action was slow—about 58 in a minute; afterwards it fell to 52, but there was no abnormal sound; the urine was examined, but no albumen was found in it; sp. gr. 1016. The day following his admission it was found necessary to draw off the urine with a catheter.

His condition continued unaltered until the 22nd, when he suddenly became comatose, and very shortly afterwards died. The day before his death, Dr. Purser made an ophthalmoscopic examination of his eyes, the pupils being widely dilated by atropine. He found the fundus of each eye perfectly normal, with the exception of slight redness of the apparent outer portion of the left optic disc, which was, however, well margined. At the time of the opthalmoscopic examination, Dr. Purser found him quite sensible when roused; but, when he attempted to answer questions, he only gave utterance to a few unintelligible monosyllables.

The *post mortem* examination in this case was performed by Dr. Purser. Some spots of extravasation were found under the tendon of the occipito frontalis on the right side; on the upper and right side of the occipital bone a small, irregular exostosis existed; the inner surface of the bones of the skull was elsewhere normal; the dura muter was healthy; the sinuses were gorged with blood, which flowed freely from the veins opened by incisions made parallel to the falax cerebri. No blood was extravasated on the surface of the brain. A few old adhesions of the arachnoid existed along the margins of the longitudinal fissure; there was also some thickening of this membrane where it covers the middle subarachnoid space, and passes from the anterior to the middle lobes across the fissure of Sylvius; there was no sign of recent inflammation;

the pia mater was not remarkably vascular. The middle and outer part of the cerebrum on the left side felt softer than the corresponding parts of the right side, which appeared to be healthy in every respect. The convolutions most affected were the posterior part of the second and third frontals, the inferior portion of the transverse frontal convolution, the island of Reil, and the anterior convolutions of the parietal lobe, and the inferior marginal convolution. The softening was not sharply defined, but seemed to pass from the outer extremity of the fissure of Sylvius, gradually merging into healthy tissue. On slicing off the hemispheres on a level with the corpus callosum, the grey matter of the softened convolutions was seen to be thicker than that on the opposite side; in parts it was quite diffluent. The white substance was also somewhat diminished in consistence, and presented numerous red spots, due to divided vessels; the corpus callosum was unaffected. On opening the lateral ventricles, the fornix, corpora striata, and optic thalami appeared equally healthy on both sides; but when the incisions were carried deeper, so as to expose the extraventricular nucleus of the corpus striatum of the left side, this part was found very much softened, and contrasted remarkably with the corresponding part on the right side; there was no trace of blood extravasation.

Finding the disease of the brain limited to the parts supplied by the middle cerebral artery, this vessel, which hitherto lay concealed in the fissure of Sylvius, was next examined; at its commencement a small clot was found completely blocking it up, and extending a short distance into the left anterior cerebral artery. This clot was firm, of a dark red colour, and moderately adherent to the wall of the vessel, from which however, it could be separated with facility; the vessel appeared to be quite healthy.

The lungs were quite healthy, and free from adhesions. The heart was firmly contracted; the left ventricle empty; the right ventricle contained a small clot; the valves were healthy; the kidneys were congested and lobulated, but there was no evidence of disease of their structure.

The brain was examined microscopically; a small portion of a softened convolution from the left side, and a corresponding portion of a healthy convolution from the right side, were examined comparatively. On the *right* side nerve cells, numerous varicose nerve tubes, and the usual molecular *debris*, were seen. The capillaries were, for the most part, healthy; but smoe of them, as well as the small arteries, showed a few fat granules in their walls; these were most frequent at the points of bifurcation of the vessels. On the *left* side the large stellate nerve cells were very distinct, being opaque and granular; numerous spherical granule cells were also seen. The nerve fibres were more scanty, and never of such length as in the healthy side. The blood vessels were much more fatty here than on the right side; the capillaries also were larger, contained

more blood, and in some places were slightly varicose; there were no blood crystals, nor any evidence of extravasation.

Dr. Banks observed that the pathological appearances which he laid before the society were of interest, as bearing on the subject of loss of speech in connexion with lesions of the brain. Since the promulgation of Bouillaud's views with reference to the part of the brain which presides over speech, much attention had been devoted to the investigation. Bouillaud believed that the faculty of speech depended on integrity of the anterior lobes.

Dax localized the faculty exclusively in the left hemisphere; but of late the startling hypothesis had been put forward by Broca (supported by twenty autopsies) that it resides in the posterior part of the third frontal convolution at the left side. The observation of many cases has lent a certain amount of support to the idea that, at least, the lesions of the left side of the brain seemed to be coincident with loss of speech.

Charcot supplied many observations in confirmation of Broca's views, but he also recorded an example of aphasia without lesion of the third frontal convolution. In the *Clinical Reports* of the London Hospital, Dr. Hughlings Jackson has published a most interesting series of cases of hemiplegia of the right side associated with loss of speech and valvular disease of the heart. In thirty-one cases in which hemiplegia with loss of speech existed, he believes that the middle cerebral artery was plugged. The case which is now submitted to the society supports, in a general way, the views of Broca and the opinion of Dr. Hughlings Jackson as to the condition of the left middle cerebral artery in cases of hemiplegia of the right side, with aphasia.—*February* 24, 1866.

Hepatic Abscess.—Dr. Duncan said, that the rarity of hepatic abscess in this climate induced him to lay the present specimen before the society. It was taken from a man, a coppersmith by trade, 35 years of age, and reported to be of temperate habits. On the 22nd of January, 1866, he was seized with a rigor, followed by other symptoms of fever, of a sufficiently alarming character to induce him to enter the Adelaide Hospital. He was admitted on the 11th of February, nearly three weeks after his illness began. He (Dr. Duncan) saw him the next day, and, from the symptoms then present, made up his mind that it was not a case of fever. In the first place, it was not typhoid fever, because there was no eruption on the abdomen, no pain or gurgling in the ileo-cecal region, no diarrhea, nor had the alvine evacuations the character peculiar to that affection; there was tenderness, indeed, on pressing the upper portion of the abdomen, but it was distinctly limited to the right hypochondriac and epigastric regions; and the only symptom to suggest the idea of its being typhoid fever was the occurrence of two rose spots on the upper part of the back, but in this situation such an occurrence could

scarcely be considered pathognomonic. Neither was it typhus; the man was in the twenty-first day of his illness, and, if the disease were typhus, we should have had a group of symptoms that did not exist in this case; he had neither the peculiar aspect, the dry brown tongue, the sordes, nor the muttering delirium that characterize typhus. The symptoms he presented were these:—A fulness below the ribs on the right side, extending into the epigastrium, which was painful and tender to the touch; a dusky whitish complexion, as if the liver were not acting properly; a distinctly yellow hue of the conjunctivæ; the feces solid, and of a drab colour; and the urine of a dirty orange tint. These appearances led him to pronounce the case one of acute hepatitis. Throughout the progress of the case there were other symptoms which clearly showed that it was not one of ordinary fever; his intellect was perfectly clear to the last, and he was greatly exhausted by heavy perspirations, which prevented him from sleeping. Dr. D. did not consider it necessary to detail the particulars of the treatment; but he said that on the 17th February there was, apparently, a considerable improvement in the man's condition. The tumour was reduced in size, he ceased to complain of pain, and there was less tenderness on pressure. On the 18th diarrhea occurred, which was followed on the 20th by a distinct attack of peritonitis in a subacute form. Then, for the first time, he complained of pain in the lower part of the abdomen, particularly over the pubes, with general tenderness over the entire extent of the surface, and slight effusion into the cavity of the peritoneum. On the following day vomiting and hiccough set in, and he died on the 23rd.

He (Dr. Duncan) looked forward to the autopsy with considerable interest; for the occurrence of peritonitis after thirty days of fever suggested the possibility of the disease having been really typhoid fever after all, with inflammation and ulceration of Peyer's glands, and consequent perforation of the intestine. He was not, however, disposed to adopt this view, because of the absence of the proper symptoms of enteric fever throughout the illness, and because the peritonitis did not set in with the suddenness and intensity that usually characterize it when produced in this way. What, then, was the cause of the phenomena? Two solutions presented themselves to his mind—one, that the inflammation of the liver had spread by contiguity of texture to the peritoneum, giving rise to the new series of symptoms which terminated in death; the other, that the disease had been a form of peritonitis all through, but originally of a local and limited character, disturbing the functions of the liver in the first instance, by proximity of position, and extending afterwards to the rest of the membrane, thereby giving rise to the secondary train of symptoms which revealed its true nature. Against this latter hypothesis was to be set the rarity of such an occurrence in the peritoneum, though it is well known that it has been sometimes met with

in a chronic form, and the general history of the case seemed to tally more with the former supposition.

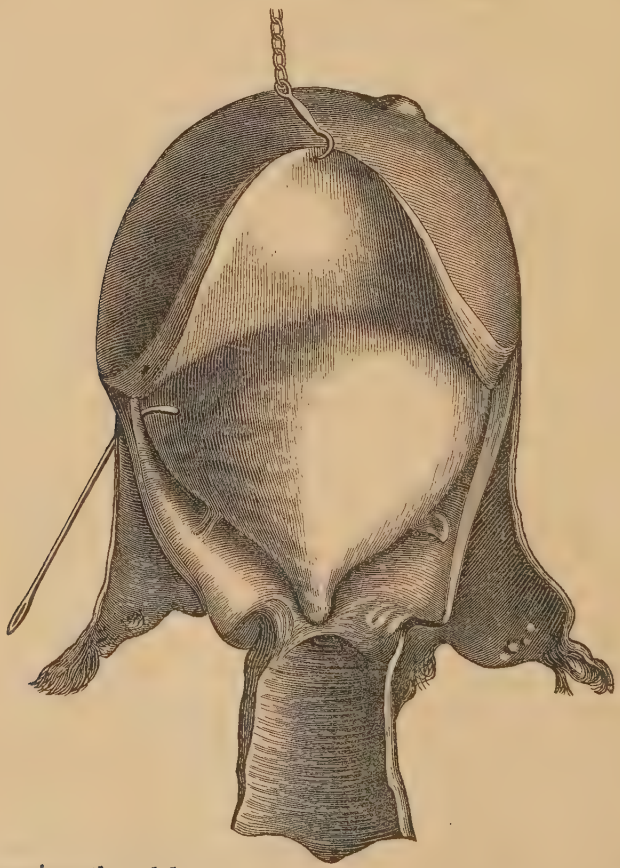
On the *post mortem* examination there was found a considerable collection of fluid, of a yellow colour, with flakes of lymph floating through it, and also adhering to the inflamed membrane, particularly about the jejunum and duodenum. The closest examination failed to discover any evidence of irritation or ulceration about the glands, or any laceration. The liver was somewhat enlarged; and, on making a section, pus, well formed and healthy, exuded freely from the biliary ducts, while several distinct abscesses were formed in different parts of its structure, particularly one large one, occupying nearly the whole of the lobulus Spigelii. The gall bladder was rather contracted in size, and contained a mixture of pus and bile. There was no ulceration to be detected in the gall bladder, though it was carefully sought for. At first Dr. Duncan was inclined to look upon the result of this examination as an instance of what is certainly very rare in pathology—idiopathic, primary abscesss of the liver, because the most careful examination failed to discover any traces of ulceration or inflammation either in the alimentary tract, or in the parts where primary abscesses connected with this affection were usually found. A second examination that morning, had, however, brought to light a small strumous abscess in the mesentery, which might possibly be the source of hepatic contamination. Still there were difficulties, whichever view was adopted. It was scarcely to be believed that a small strumous abscess in this situation should have been attended with constitutional symptoms of so severe a type; and, on the other hand, the liver did not exhibit that hyperemic congestion which we should surely have expected to find had the case been one of acute inflammation, proceeding in due course to the formation of abscess.—*March* 3, 1866.

Tumour of the Uterus.—Dr. Bennett showed a specimen of fibrous tumour of the uterus, and also a drawing of the tumour from which the accompanying woodcut had been executed. The specimen was taken from the body of a woman of middle age, brought into the dissecting room of Trinity College School.

As the body lay on the table the abdomen presented very much the appearance seen in the middle period of pregnancy; but, on being handled, the tumour causing the enlargement, while evidently uterine, was much more firm in feel than a pregnant uterus. There were present two symptoms of pregnancy, independent of the tumour itself, which attracted attention—a brown marking of the middle line of the abdomen, chiefly over the tumour, and considerable enlargement of the breasts from accumulation and secretion of milk.

It is worthy of remark that, although the brown mark was the same

as that which is seen in pregnancy, it did not form an umbilical areola, a point which the late Professor Montgomery had noticed when discussing the value of these marks as signs of pregnancy. From the consideration of these appearances, and the external examination of the tumour, it was concluded that the case had been either one of pregnancy, or of recent delivery with enlargement of the uterus from inflammation—or, lastly, of fibrous tumour; this last opinion was proved to be the true one by vaginal examination and by the dissection. The finger could be introduced within the os uteri, and came in contact with the apex of the tumour.



On opening the abdomen the uterus was found to be free from adhesion to the adjoining viscera, except posteriorly, where the ovaries were abnormally adherent to it, the connexions being of old standing. Its surface presented nothing remarkable, except some few fibrous tumours in the sub-peritoneal tissue, one of which was seen in the drawing.

On opening the uterine cavity, by raising the anterior wall, the tumour was exposed to the extent shown in the drawing; nearly one half of its entire length projected into and filled the cavity, while the remainder involved the entire fundus. A probe passed through the Fallopian tube, entered into the upper angle of the incision, and so marked this part on either side as the original limit of the fundus; at this level the mucous membrane was reflected on the tumour all around.

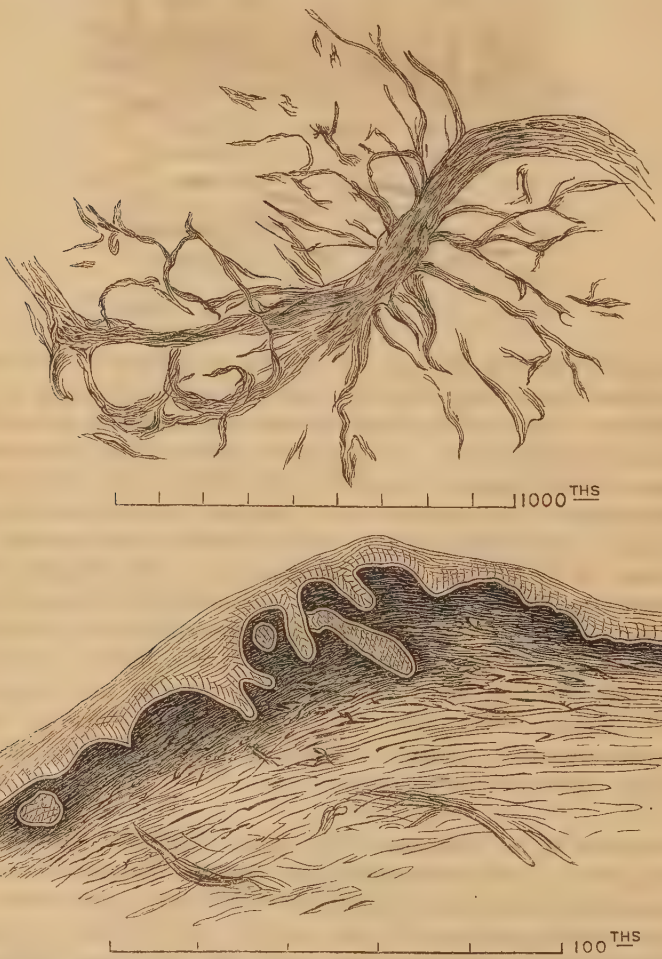
It was evident that a tumour having so extensive an attachment, could not have been removed during life, unless the uterus were also removed with it. The pointed extremity of the tumour, lying in the cervix uteri, was covered by loose and very vascular mucous membrane, and on either side of its free portion there hung similar processes of the membrane.

Some clots of blood in the vagina and uterus showed that there had been a small amount of hemorrhage immediately before death. The cervix uteri showed the markings called arbor vitæ so distinct and perfect that it is probable that the uterus had never been pregnant. The tumour was composed of the usual form of fibrous tissue seen in these cases—narrow fibres with abundant nuclei. The case was of interest, as showing how such tumours could simulate pregnancy, and also for the great size and mode of connexion of the tumour, which, with the uterus, weighed four and a half pounds.—*March 3rd*, 1866.

Staphyloma.—Dr. Purser exhibited drawings illustrating some unusual points in the pathological anatomy of the cornea. The drawings were taken from two specimens of staphyloma recently removed, in St. Mark's Hospital, by Sir Wm. Wilde and Dr. Wilson. In one case the disease involved only part of the cornea, and had resulted from small-pox ulceration; in the other the entire cornea was protruded, the staphyloma being the result of long-continued strumous ophthalmia. On vertical section the following were the appearances seen:—

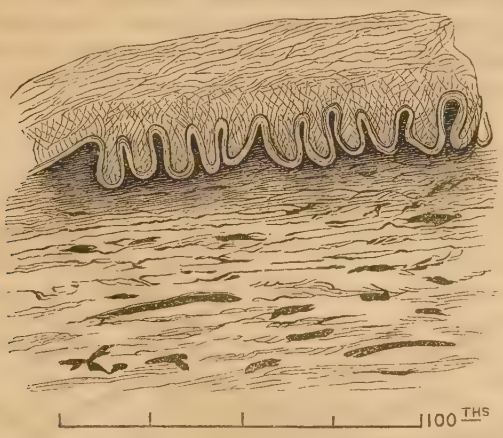
The epithelium was greatly thickened, and consisted manifestly of two layers—an outer horny layer, in which the nuclei of the cells had disappeared, and which easily separated from the inner or mucous layer, which consisted of well-formed nucleated cells, those nearest the cornea being oval, their long axis placed perpendicularly to the surface. The line of junction between the epithelium and proper cornea was very irregular. In some places the cornea sent papillary processes outwards into the epithelial layer; in others the epithelium dipped down into the cornea. These elevations and depressions were very irregular in size and shape. In some preparations portions of epithelium were seen completely cut off from the remainder of the cells, and lying imbedded in the corneal substance. It is probable, however, that these were connected with the surface by a narrow neck,

through which the line of section did not pass. These appearances were very generally seen over the surface of the staphylomata, but unequally developed in different parts. The anterior elastic lamina was nowhere visible. The corneal cells were much altered, having undergone a very great increase both in number and size. Near the surface they were comparatively small, and lay very irregularly, so that here the laminated appearance of the cornea was quite lost. Deeper they were



much larger, and in some places were undergoing a development of fibrous tissue, the change being produced by a prolification of the nuclei, which, assuming a fusiform shape, ultimately were converted into fibres, so that from a single cell was produced a mass of fibrous tissue,

preserving, more or less, the general shape of the cell from which it had originated. In all cases the cells communicated freely with each other by their branching processes. The inter-cellular substance was



transparent and homogeneous, and showed no indication of the change into fibrous tissue which has been described by Mr. Bowman and Mr. Richardson. The posterior elastic lamina was in general absent, but in some places still persisted. To the posterior surface of most of the sections masses of black pigment, derived from the adherent iris, were attached. With regard to the irregular line of junction between the cornea and epithelium little information is to be derived from authors. Mr. Bowman, in his *Lectures on the Anatomy of the Parts Concerned in the Operations on the Eye* (page 39) gives a drawing of a corneal opacity from an ox, in which a somewhat similar appearance is seen. It is must mentioned by any other writer consulted by Dr. Purser. An appearance very similar to that presented by the corneal cells is shown in Wedl's *Atlas der Pathologischen Histologie des Auges* (Plate I., Fig. 6), from the cornea of a rabbit in whom an artificial keratitis had been induced.—*March* 10, 1866.

Laceration of the Duodenum.—Dr. Symes said that on Wednesday evening last a young man walked into Steevens' Hospital complaining of an injury received under the following circumstances:—Some three or four hours previously he was engaged in weighing himself, and the attachment of the iron beam gave way, the beam falling and impinging on his abdomen with violence. He suffered considerable pain and a constant desire to pass water, being disturbed every five minutes endeavouring to empty his bladder. While he (Dr. Symes) was in the ward next morning, the man suddenly died.

On examining the body, twenty-four hours after death, not the slightest trace of any injury to the integument covering the abdomen was to be seen. On opening the peritoneum it was found that peritonitis was general. There was a general effusion of serum into the cavity; the intestines were matted together with flakes of lymph, and presented every shade of vascularity from bright scarlet to purple. The bladder was contracted and empty, but uninjured. There was a laceration of the duodenum, extending to a portion only of the calibre of the tube.

That day week he had the honour of laying before the society a case in which the bladder was ruptured, and where the peritonitis was very limited in extent, just sufficient to circumscribe the extravasation of urine. In that case the opening was small and the extravasation of urine gradual. Here the opening in the intestine was large, the extravasation sudden and complete, and the peritonitis general. In the case of rupture of the bladder the patient lived twelve days; in this case only twenty hours. In many cases of peritonitis, great irritability of the bladder was present, and it was but reasonable to suppose that such should exist. As general inflammation acting from without on the walls of the stomach caused great irritability in it, so no doubt it would produce irritability of any other hollow viscus like the bladder. It was a remarkable circumstance in these cases that great internal injuries might exist without any injury of the integument covering the abdomen—not even an abrasion or ecchymosis.—*March* 10, 1866.

Tumour of the Uterus.—Dr. Denham exhibited a uterine tumour, which had been taken from the body of a woman whom he saw for the first time so far back as 1859. She then complained of increased menstrual discharges, which in a short time became so excessive as to weaken her very much, and she was induced to enter the Rotundo Hospital under the care of Dr. M'Clintock. The tumour was situated midway between the symphysis pubis and the umbilicus. The os was completely closed. Beyond general debility she had little to complain of; her general health remained remarkably good. This was in 1860. She left the hospital, but returned in the month of July, 1861, greatly emaciated, anemic in appearance, with rapid pulse, and great general weakness, evidently arising from the loss of blood which she had sustained. Dr. M'Clintock said the os dilated freely, appearing almost like that of a woman in labour, and within the os was the tumour. He endeavoured to remove a portion of it, and made two incisions with a pair of scissors into the os uteri. On three different occasions during Dr. M'Clintock's mastership, and again when he (Dr. Denham) became master of the hospital, they endeavoured to remove portions of this tumour, and with considerable success. The os dilated considerably with very little trouble.

The only advantage derived from these successive operations was, that the hemorrhages seemed to decrease considerably. There was no general disturbance until after the third and last attempt was made. After the third operation, when there was a considerable portion of the tumour removed, there was slight uterine disturbance and inflammation which rapidly subsided. She left the hospital and returned to her home. She came back to the hospital again, with her constitution greatly shattered, suffering under rheumatism; her hands and feet enlarged so that she could not follow any occupation or work. At her urgent request they again endeavoured to remove a portion of the tumour. With the assistance of Dr. M'Clintock he made a crucial incision with a fine scalpel. This was followed by considerable hemorrhage; in fact before any incision was made the mere manipulation gave rise to hemorrhage. This was on Monday; symptoms of inflammation set in, and she died on the following Saturday.

On opening the abdomen they found some purulent matter on the anterior wall of the uterus.

The tumour, which resembled a lobulated kidney, was found to fill up the entire cavity of the uterus, the enormous size of the base showing how hopeless it would have been to attempt its entire removal. There was very little appearance of inflammation where the incisions were made. The tumour was of a dense, fibrous structure, with a few ossific deposits in its interior. In a late publication by Dr. Marion Sims he gave a drawing of this case. He was in the hospital on the occasion of one of the operations; and it was a strange thing that he described the tumour as about the size of a pigeon's egg, although, at the time he saw the woman, it extended upwards half way between the umbilicus and the pubes.—*March* 10, 1866.

Fracture of the Pelvis—Rupture of the Bladder.—Dr. Fleming detailed the following case, illustrative of a specimen of fracture of the pelvis, which he laid before the society:—

A labouring man, aged sixty, was employed in undermining one of the side walls of a house in the vicinity of the Richmond Hospital, when, while he was stooping forward, the wall gave way, and he was crushed beneath it. He was brought to the hospital some hours afterwards, sick and faint, groaning with agony, and totally powerless.

There was extensive ecchymosis in the sacral and pubic regions, blood was flowing from the urethra, and had distended the penis, scrotum, and left inguinal canal, so as to resemble an inguinal hernia. The slightest movement of the lower limbs gave pain, but the principal suffering was referred to the region of the bladder and to the symphysis pubis, where the tenderness was so extreme that the slightest pressure could not

be borne. The symmetry of the pelvis and of the lower extremities was normal, and the motor power and tactile sensations were tolerably perfect.

The immediate treatment had reference to the removal of the state of collapse and to the allaying of pain. Subsequently it became necessary to introduce a catheter; the urine drawn off was not tinged with blood. The lower region of the abdomen gradually became swollen and tympanitic, the ecchymosis increased in extent, and the crepitation of air was distinct under the integuments. Any attempt to change the position of the patient caused agonizing pain, nor could he endure the slightest movement of the limbs upon the pelvis. Reaction did not take place. His countenance became pallid and haggard; and he died with the symptoms of internal hemorrhage, in about forty-eight hours after the accident.

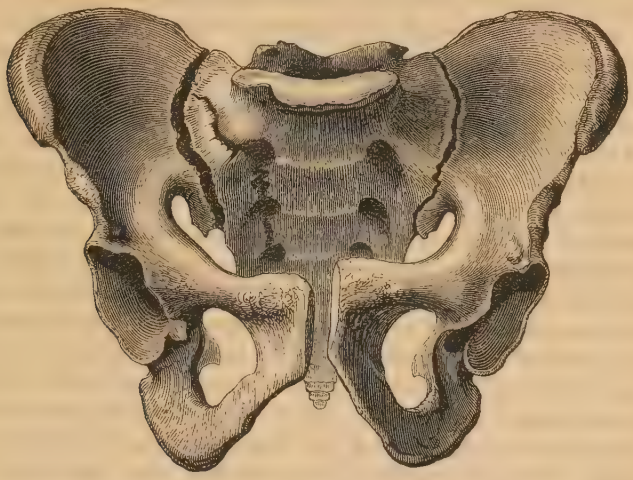
Upon examination, *post mortem*, the ecchymosis, tympanitis, and emphysema observed during the progress of the case were found to occupy the entire of the hypogastric, iliac, and inguinal regions, as well as the tract of the inguinal canal. On the left side of the symphysis pubis a distinct projection was felt, the points of the fingers sinking into a hollow along its margin. When the walls of the abdomen were perforated in the hypogastric region, a quantity of air, devoid of any fetid odour, escaped from the cavity, which was found to contain a large quantity of blood, part of which had made its way into the pelvis and into the left inguinal canal.

At the symphysis pubis there was a distinct separation of the bones, the left horizontal ramus being on a plane considerably above and behind that of the right, and a thin scale of bone being detached from it, and left firmly adherent to the intervening fibro-cartilage. There was a deep sulcus, stained with blood, between the true ligaments of the bladder, in the anterior wall of which a vertical rent was discovered, about a quarter of an inch in extent anterior to the reflexion of the peritoneum; the edges of the rupture were so closely applied to each other that it was only by the escape of bubbles of air from the bladder, when it was compressed, that the solution of continuity was discovered. The urine, of which there was about three ounces in the bladder, was unmixed with blood. The ecchymosed and lacerated state of the perineum and scrotum rendered it impossible to isolate the urethra, which was torn across in its membranous portion.

On proceeding to remove the pelvis, a partial separation of its bones, was found at each sacro-iliac synchondrosis and also a vertical fissure extending through the right side of the body of the sacrum, and traversing the sacral foramina. There was no trace of inflammatory action in the peritoneum or elsewhere.

With reference to injuries of the pelvis in general, Dr. Fleming observed that their diagnosis was frequently involved in great obscurity, and that the propriety of attempting an accurate adjustment of the

displacements consequent upon them was often extremely questionable. As



in certain cases of fracture of the ribs, mechanical compression of the thorax could not be tolerated, so likewise in fractures or other injuries of the pelvis, the agony resulting from any constrained position for adjustment was frequently extreme, and its advantages were very questionable. Too much anxiety to detect crepitus on the one hand, and on the other, to remedy accompanying deformity, may be followed by fatal consequences—such, for example, as hemorrhage, or additional injury to the contained viscera.—*March* 10, 1866.

Dr. Barton exhibited a morbid specimen showing the slow but fatal results of long-continued obstructions of the urethra. A man, aged between fifty and sixty, came into hospital on last Saturday. His symptoms were as follows :—His lips were livid ; his breathing hurried ; his pulse weak and failing ; the scrotum and both lower extremities were œdematous, and covered with an eczematous eruption, discharging a thin fluid. His dyspnea was so severe that he could scarcely lie down, and he was continually straining to pass water. He stated that these symptoms had existed for a long time, and had become gradually worse, compelling him to seek for admission into the hospital.

He stated that he had been subject to stricture for more than twenty years. Sixteen years ago he had suffered a severe attack of total retention. He was then under the care of Mr. Wilmot, who performed the perineal section through the stricture. Immediate relief followed the operation, and after the wound healed he could pass No. 6 catheter, which he continued to do, although suffering more or less from the obstruction caused by the stricture ; but he was able still to pass the

instrument. Latterly he suffered from frequency of passing water. This increased, and then the other symptoms which had been mentioned came on. They found that No. 5 catheter easily entered the bladder, but the orifice of the instrument became so clogged with mucus that not more than three ounces of urine could be drawn off; the urine was mixed with blood, and was highly albuminous. The action of the heart was feeble, and he had cough. He died on Tuesday evening.

On examination they found a well marked example of stricture of the urethra, but presenting some features of peculiar interest. In the first place it was situated a little in front of the bulb, and was formed by a mass of lymph extending for fully two inches along the urethra. On examining the canal behind, they did not find much dilatation, which accorded with Guthrie's observation that considerable dilatation was not generally to be expected, even in cases of aggravated stricture. The prostate gland was healthy; the walls of the bladder were enormously thickened; the mucous membrane was of a dark greenish colour, deeply coated with phosphate of lime and tenacious mucus; the ureters were largely dilated; the left kidney resembled cirrhosed liver; the calices were very much dilated, and the structure of the gland was infiltrated with a hard substance. The right kidney presented a somewhat different appearance, but its calices were also dilated. Probably the mass of lymph originally deposited had been increased by the operative proceedings that became necessary when he had complete retention of urine, which would probably have destroyed the patient at the time if it had not been relieved by operation. Subsequently it produced death by other pathological changes. The thickened bladder, the inflamed mucous membrane, the dilated ureters, and, finally, the inflammatory action which prevented the kidneys from performing their functions, were produced by a *constantly existing*, though slight, obstruction in the urethra—for a No. 6 catheter was constantly introduced, notwithstanding which the fatal effects of stricture gradually developed themselves.—*March* 17, 1866.

Amyloid Degeneration of the Liver.—Dr. Purser made the following communication:—The specimens which I lay before the Society consist of the liver and one of the kidneys of a man who died in the South Dublin Union Workhouse. They were given to me for microscopic examination by Dr. Jennings, under whose care the patient was, and at whose request I now exhibit the parts.

The history of the case is not very perfect. The patient had long suffered from constitutional syphilis, affecting the bones. When he came under Dr. Jennings' care he was affected by uncontrollable diarrhea and vomiting, under which he sank.

On opening the body, the kidneys at once attracted notice from their great size; they weighed, in the recent state, 1 lb. 9 oz. each. The

capsule separated readily; the surface of the kidney was smooth, of a yellowish-grey colour, and presented in some spots the usual stellate vascularity. On section, the increase of bulk was seen to involve both cortical and medullary substances, but chiefly the former. The cut surface had a homogeneous appearance; and, when viewed obliquely, the Malphighian bodies could be seen as shining translucent granules. The cortex was remarkably bloodless, but the vessels of the pyramids contained blood in some quantity. Very little juice could be obtained from the cut surface by scraping or pressure. The whole organ had a tough, resistent feel, like Indian rubber.

On examining thin sections with the microscope, the increase in bulk was seen to be due, for the most part, to a great increase in the inter-tubular tissue of the gland, which, as a nucleated connective tissue, separated the tubes and vessels from each other in a most remarkable manner. This was seen in both cortex and medulla, but was most remarkable in the former, both from its absolutely greater quantity, and from the small amount of connective tissue which is normally present in this part. The Malphighian capsules appeared as thick laminated sacs enclosing the capillary tufts. The arteries and Malphighian capillaries were affected by amyloid degeneration in the most advanced degree. Their walls were thickened and shining, and gave the characteristic red reaction with iodine. In some cases it appeared as if the vasa efferentia and the inter-tubular capillaries were similarly diseased; but, as the attempts to inject the kidney failed, owing to the organ's having been cut into before it was sent to me, I do not wish to speak with confidence on this point. The vasa recta were universally degenerate; the walls of the convoluted tubes were thickened. The epithelium in some places adhered to the walls, leaving a central canal; this epithelium had a more homogenous and resistent aspect than normal, as if infiltrated by some transparent exudation. Fragments of it easily separated, and floated in great numbers in the fluid of the preparation, presenting their thin edges to view, and appearing as crescentic bodies, in many cases not unlike the fibre cells of the spleen, and disclosing their true nature only when they rolled over and presented their flat surfaces to view. In some places the nuclei persisted, but for the most part they were withered or absent; in other places the tubes were distended by a granular material, probably of fatty nature. In others the tubes contained a translucent and homogeneous substance, forming casts of the tubes, often of considerable length. This substance had very much the appearance of the morbid deposit in the walls of the degenerate blood vessels, but did not stain with iodine. It offered a remarkable resistance to reagents, being unaffected by dilute acetic or hydrochloric acid, or dilute solutions of caustic alkalies, ether, and boiling alcohol. It was found for the most part in the convoluted tubes; and when present in

the straight tubes, had evidently been washed down into them from smaller tubes, for it lay loose in their cavity.

These casts are very brittle, breaking easily transversely, with a sharp fracture. They are very different from the usual *hyaline* or *fibrinous* casts found in the urine, in the ordinary chronic forms of Bright's disease. Their presence in the tubes is, so far as I have seen, constant in all cases of advanced amyloid degeneration; and from their presence in urine, I have been enabled to diagnose amyloid degeneration without having seen the patient—a diagnosis subsequently confirmed by *post mortem examination.* Of the composition of these casts it is impossible to speak with certainty. They are probably of a fibrinous or albuminous nature, and possibly a further stage of the exudation which has been already described as infiltrating the epithelium of the convoluted tubes. The straight tubes did not present any remarkable morbid appearance. In no instance could I satisfy myself that the amyloid degeneration, as evidenced by the iodine reaction, had extended beyond the blood vessels.

The liver was enlarged, heavy, smooth on the surface, tough, and bloodless. In it also amyloid degeneration was found involving only the ramifications of the hepatic artery, and a few of the cells in the outer parts of the lobules; in other places the cells contained much fat.

Other organs were not examined.—*March* 24, 1866.

Diseases of the Mitral, Aortic, and Tricuspid Valves.—Dr. Jennings brought the following case before the society:—Michael Toole, aged forty years, was admitted into hospital on 13th February, 1866, labouring under intense dyspnea, incessant cough, attended with copious expectoration, general œdema, and anasarca. His health, according to his own statement, had been tolerably good until the latter part of the past year, when cough, difficulty of breathing, and pain in his right leg, compelled him to seek relief in one of the city hospitals, where he had continued under treatment until a few days previous to his admission into the South Union. On percussion intense dulness was found to exist on both sides of the chest in front and behind, except for a space of about three inches below the clavicles, where puerile respiration, interspersed with occasional loud sonorous râles, was audible. At the apex of the heart, at both sides of the left nipple, both below and above its level, were heard two distinct systolic bruits, short and abrupt; while over the area of the aortic orifice existed a double murmur, totally different in character, being much rougher and harsher. The first of these latter sounds was so intense and prolonged as almost to efface the second, which, however, became perceptible on careful examination, and was loudly audible over the entire anterior, posterior, and lateral regions of the chest; being, in fact, so diffused as effectually to mask all cardiac rhythm, and any respiratory sounds. Strong pulsation was observed in both carotid and subclavian

veins, and slight throbbing in the left radial and ulnar arteries. The pulse was 120, exceedingly weak, readily obliterated by pressure, yet regular. During the few following days, under the free use of stimulants, extensive blistering, diuretics, &c., the cough, dyspnea, pulmonary congestion, and general distress were reduced; and on the 17th, the cardiac rhythm, for the first time, became perceptible, and the different bruits—especially the aortic systolic—less violent, and for this reason more decidedly distinguishable. This rally, however, proved only very temporary; former symptoms soon returned, and in an aggravated form; the anasarca (which had almost disappeared) returned, and rapidly increased; and the vital powers gradually sank until the morning of the 21st, when he died, having lain in a semi-comatose state for the preceding twenty-four hours.

The diagnosis arrived at was, that each of the orifices in the vicinity of which the different bruits were audible had undergone morbid changes; that the murmur heard above and to the right side of the nipple, taken in connexion with the general venous turgescence and general œdema, indicated tricuspid regurgitation; that that heard at the left of this point, together with the pulmonic engorgement, pointed out mitral reflux, while the double basic murmur established the existence of aortic obstruction and patency. The absence, *to any great extent*, of visible arterial pulsation, so constant a symptom in this latter lesion, was satisfactorily accounted for by the fact that the quantity of blood transmitted through the systemic vessels was reduced to a minimum, in consequence of the free regurgitation taking place through the tricuspid and mitral orifices.

The correctness of this diagnosis was verified in every particular by the *post mortem* examination. The pleural cavities contained each about two pints of serum; the lungs were intensely engorged, and dark in colour, the tubes being filled with frothy mucus. The heart was globular in form, and enlarged, chiefly from eccentric hypertrophy of the left ventricle, which constituted the principal part of its bulk, though the other chambers also had undergone the same change; its tissue was soft and friable, and easily torn; the right auricle was occupied by a large fibrinous clot, which extended into the venæ cavæ; the right auriculo-ventricular orifice measured in circumference five and a half inches; the right ventricle was lined by a firm fibrinous coating; the anterior and posterior divisions of the tricuspid valves were firmly attached, the former to the free wall of the cavity, the latter to the ventricular septum, save a margin of each, of about three or four lines in depth. Both the left chambers were occupied partly by sanguineous, and partly by fibrinous clots; the left auriculo-ventricular orifice was, like the right, vastly dilated, measuring in circumference five and a half inches; the posterior flap of the mitral valve was also firmly adherent to the ventricular wall, while the anterior was covered on its aortic surface with soft vegetations. The aortic semi-lunar valves were thickened, puckered, and occupied by

morbid deposits; and the vessel itself was covered throughout its entire arch by atheromatous and osseous scales.

Disease of the Mitral Valves.—Dr. Jennings exhibited the recent specimen in this case, which was that of a woman, aged forty, a cook, who had during the past two years suffered from dyspnea, palpitation, and cardiac oppression—symptoms which had latterly become greatly aggravated. She was admitted into hospital on the 19th February last. The difficulty of breathing at this time had merged into constant orthopnea; her face was bloated and livid; there was considerable anasarca and ascites, also frequent irritating cough, and coldness of the general surface. The heart's action was exceedingly rapid, irregular, and fluttering, and its double beat undistinguishable; the external jugular veins were prominent; and in them, as also in the subclavian veins, a tremulous motion, very like that seen in a strongly sucking leech, was perceptible on close observation. Repeated examinations failed to detect the slightest arterial pulsation at the wrists, or even along the arms, nor could the faintest bruit be heard in the precordial region; both sides of the chest were extremely dull. On the 4th of March she had an attack of hemoptysis, which reappeared on one or two subsequent occasions.

Here were two distinct groups of symptoms, strongly contrasted, indicating lesions of opposite sides of the heart. The pulmonic congestion and hemoptysis, the rapidity and fluttering nature of the heart's action, taken in connexion with the failure of the arterial pulse, spoke of mitral obstruction—the very absence of cardiac murmur telling how advanced was the disease, how complete the occlusion; while the cerebral congestion, the venous turgescence and pulsation, the extreme anasarca and ascites, could only be accounted for by the existence of regurgitant disease of the tricuspid aperture. A few days prior to her decease she suffered a severe convulsive attack, described by the attendants as distinctly epileptic in character; and on the 9th, having lain in a state of semi-coma for the preceding two days, she was released by death from her protracted sufferings.

The *post mortem* examination disclosed extensive serous infiltration of the cellular tissue, as also effusion into the abdominal and right pleural cavities, which latter was completely filled. Both lungs displayed fine specimens of apoplectic extravasation—the right of the diffused, the left of the circumscribed variety.

On opening the pericardium, the heart was found to be enlarged—the chambers which had undergone the principal change being the two auricles, and the left ventricle, the walls of the latter being greatly thickened, and its cavity proportionably reduced in capacity. Both auricles were dilated, and filled with dark coagula; the chamber which was undoubtedly least altered in every respect was the right ventricle, which would not under ordinary circumstances have attracted any special notice.

The mitral orifice, viewed either from the auricle or ventricle, presented the appearance of a narrow semilunar fissure; all trace of valvular structure had disappeared, both divisions being converted into a thick firm tissue, almost as rigid as cartilage. So firm and close was their apposition, that the introduction between them even of the handle of a scalpel required considerable force; and from their structure and peculiar arrangement, they must, during life, have permitted merely a trickling current of blood to pass. The chordæ tendineæ were much thickened, as were also the muscular columns connected with them.

The aortic aperture was much contracted, barely admitting the tip of the index finger; its valves were indurated, thickened, and puckered. The tricuspid valves likewise were diseased, and occupied by a morbid deposit, the left flap being moreover very cribriform: all were contracted in outline, and connected together, so as to form a funnel-shaped process, terminating in a circular aperture. The opening of the pulmonary artery, and its valves, were healthy, nor were the pulmonic veins visibly increased in calibre.—*March* 24, 1866.

Softening of the Brain.—Dr. Hayden said, that the brain, heart, and portion of the lung, which he now laid before the Society, were taken from the body of a female, aged forty-seven, who was admitted to the Mater Misericordiæ Hospital on the 17th of last month, and died on the 24th. It seems that this woman, whose occupation was that of a seamstress, had enjoyed tolerably good health, with the exception of a few attacks of rheumatism, up to the 27th of last December; on that night she went to bed in her usual health; and her husband, on the following morning, found her paralyzed on the right side, and unable to speak. The woman remained under the care of a medical man in this city from that time until the 17th of March, on which day she was admitted into hospital under his care, in the following condition:—There was complete paralysis of motion of the right upper extremity, and partial of the corresponding lower extremity. The woman was able to draw the leg up in bed, and to stretch it out; and it was reported to him, that on her admission she walked into the ward without much assistance, by dragging the right leg after her. There was also a partial paralysis of the right side of the face; the left angle of the mouth was drawn towards the left ear. She could protrude her tongue; it deviated slightly to the right side, but she was able to move it to the left; she was also able to close both eyes, and to throw the skin of the forehead into transverse wrinkles; she was incapable of uttering a word beyond a monosyllable. She seemed perfectly intelligent; the pupils were normal and equal; the pulse 160, irregular and intermitting, as was also the heart's action; the sounds of the organ were loud, ringing, and extensively diffused over the anterior surface of the chest. The patient could take food, both solid and liquid.

and swallow it well. The history of the case; the fact that there was manifestly disease of the heart, even though there was no murmur; the suddenness of the occurrence of the symptoms; the paralysis of this special form, namely, right hemiplegia with loss of speech, led him to the conclusion that the case was one of lesion of the upper part of the left motor tract, and likewise of the left anterior lobe of the brain, supposed to be the seat of language. It was probable, under the circumstances, that these alterations were due to the impaction of an embolus detached from the heart, carried upwards, and arrested in the left middle cerebral artery. The latter portion of this diagnosis was only probable or conjectural; the former, manifestly well-founded.

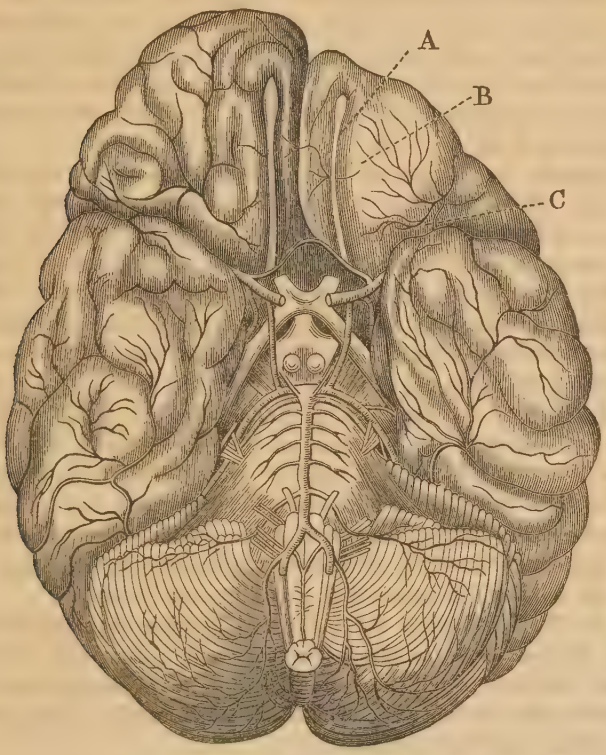
From the 17th of March till the 21st there was very little change. On the 21st the clinical assistant noticed that the woman endeavoured to convey that she felt pain in the head; he put his hand on her forehead, guided by her left hand, of which she had perfect use, and he was struck by the fact that on the right side of the forehead the temperature was greater than on the left, and that there was also a distinct throbbing on that side; the patient likewise complained of considerable tenderness on the right side of the forehead.

As regards the faculty of speech, there was ample opportunity of testing it. He frequently put questions to her; she was unable to answer, except by the monosyllables, "yes," and "no;" he asked her name, but she could not tell; he went over a long list of names, and when the wrong name was mentioned, she invariably said, "No, no;" but, when the right name was pronounced, she immediately said, "Yes, yes, yes;" and seemed quite pleased at the discovery he had made. On one occasion she made use of the word "six," in answer to a question as to the duration of her illness. She intended to have said "six weeks," but broke down after the utterance of the word "six." She always, by signs with the left hand, was able to communicate some vague general notion of her suffering, which was chiefly located in the head. She was perfectly intelligent, recognized her husband when he came into the ward, and endeavoured to communicate, through him, the sense of gratitude she felt for the attention that had been paid her.

On the 23rd of March her pulse had become imperceptible in both wrists; the heart's action was extremely feeble; the backs of the hands and feet had become livid, and remarkably cold. Now, for the first time, the bladder and rectum were evacuated involuntarily. She was able to swallow fluids and liquid food.

On the 24th neither the heart nor pulse was felt; she was unable to swallow; she moaned piteously, as if in pain; was unable to move any part of the body except the left leg and arm; and on the evening of that day she died, having ceased to moan some time before, or attempt to express her feelings or sufferings; there was no convulsion before death, which occurred very quietly.

On the following morning a *post mortem* examination was made. On the removal of the brain, it was found that the left anterior lobe was altered considerably; and a drawing, made by one of the pupils in the hospital, showed very clearly and faithfully the contrast between the two lobes. From this drawing the annexed woodcut was made by Mr. Oldham. The convolutions and sulci on the inferior surface of the left anterior lobe were obliterated; the left olfactory nerve and bulb were on the free surface of the brain, not imbedded in a sulcus, as in the healthy organ, and were semi-fluid in consistence; the former had assumed a cylindroidal figure, having lost its angles and facets. He could not, however, in consequence of the inability of the woman to express her feelings fully, ascertain if there was any impairment of the sense of smell. The left anterior lobe was of a light yellow colour, and very soft, almost pulpy.



A Softened olfactory nerve and bulb of left side raised out of the corresponding sulcus by obliteration of the latter, resulting from diffluence of the adjacent cerebral substance. It will be likewise observed, that by falling in of the left anterior lobe, the olfactory nerve on that side is removed to a greater distance from the great longitudinal fissure than is the case on the opposite side.

B Situation of obliterated orbital convolutions.

C Situation of obliterated marginal convolution.

The disproportion in volume between the anterior lobes of the right and left side is well represented in the woodcut, as was likewise the contrast in the colour of these lobes in the original drawing.

On examining the anterior lobe more carefully, he found that not only were the convolutions on its inferior surface obliterated, but the second and third frontal convolutions were also effaced, the sulcus between them being filled up, while the first frontal convolution remained in its integrity. It would be seen that the island of Reil, in the fissure of Sylvius, had undergone a corresponding change—it was completely obliterated. He examined the left middle cerebral artery with the expectation of finding an embolus, but did not succeed in doing so; there was no embolus in this vessel, or in any of its branches, nor any alteration in the texture of the vessels themselves. That day he examined carefully a portion of the left anterior lobe microscopically; it was of the consistence of cream; the cineritious substance consisted of fat globules of various sizes, large granular cells, compound granular corpuscles, many crystals of margarine, and a few of hematine. The white or medullary substance was composed of the same elements, with the addition of beaded nerve fibres, and a few plates of cholesterine. On making a horizontal section of both hemispheres of the cerebrum, about the anterior three-fourths of the left corpus striatum were found entirely broken down, of the consistence of thick cream, and to have completely lost their identity on the surface of the section. The extra-ventricular nucleus had disappeared; but a small portion of the intra-ventricular, about the size of a pea, remained in the small extremity of the corpus striatum, and in the neighbourhood of this the brain substance was firm. The optic thalamus was unaltered, as was likewise the entire motor tract on the right side. There was no extravasated blood, nor any evidence of a former apoplectic effusion.

The heart presented features of some interest; on the right side there was no alteration, but on the left there was a considerable contraction of the mitral orifice; this was due to cohesion of the two segments of the mitral valve, rather than to thickening; the chordæ tendineæ were very slender. The left auricle was somewhat hypertrophied; the upper portion of it was one-fourth of an inch thick, and the centre, one-eighth of an inch; the thickness of the walls of the left ventricle was at the middle half an inch, and at the apex a quarter of an inch; the mitral orifice barely admitted the tip of the index finger; the aortic valves were partially diseased; their competency, however, was but slightly impaired, for, on pouring water into the aorta, it escaped very slowly into the ventricle. The condition of the heart possessed very considerable interest in this respect, that there was no murmur audible, notwithstanding the existence of mitral contraction in a high degree. He had examined the heart carefully every day, with a negative result as regarded murmur; and he was now led to the conclusion that its absence was due to the extreme feebleness of the patient; and that, if there had been more heart force, a murmur would have been detected.

The case furnished a good example of aphasia, or aphemia, due to

destruction of the left anterior frontal convolutions. This did not consist of loss of the *ideal* portion of the faculty of speech; for clearly the woman was full of ideas, knew the names of things, and was partially successful in expressing her ideas by means of monosyllables and signs; she made a correct application, by assent and dissent, of the names of persons and things. She seemed greatly annoyed when she failed to convey her meaning, got flushed in the face, and excited; and when assistance was given to her, she seemed disappointed at our failure to interpret her thoughts; but, when our efforts were successful, she was manifestly pleased. This loss of articulate speech was not due to paralysis of the organs of speech; for the woman could use the tongue, could move it to either side, and was able to grasp the drinking vessel with her lips; he concluded therefore, that it was the result of the loss of that co-ordinating power which we possess over the muscles of the organs of speech, and by means of which we are enabled to modulate these organs so as to give rise to the phenomenon of articulate language. He discovered in the upper part of the right lung a good example of pulmonary apoplexy, which, according to his experience, was generally to be found in cases of death from mitral obstruction.—*April* 7, 1866.

Obesity of the Heart.—Dr. Law exhibited an example of obesity of the heart, taken from the body of a woman, aged sixty-seven, who was brought into Sir Patrick Dun's Hospital, labouring under most urgent dyspnea, dependent on extensive emphysema of the lungs, with bronchitis. She was universally dropsical; and in point of fact, when admitted into hospital, she was *in extremis*. He understood that she had been for a long time labouring under asthma, and had occasional bronchitis, every attack causing increased distress, and at last general dropsy came on. He was anxious to show the specimen, as illustrating the mode in which emphysema of the lungs affected the heart. There was extensive eccentric hypertrophy of the left ventricle, showing that, no matter how far any obstruction might be from the organ, it was the left ventricle which was stimulated to act against it. In the right ventricle there was extremely little muscular structure remaining, but an extensive deposition of fat. It was often asserted by systematic writers on cardiac disease, that in the cases of pulmonary emphysema there was hypertrophy of the right ventricle; and that there was strong action of this portion of the organ, because its action was heard in the epigastrium. Dr. Law believed that frequently what was supposed to be the action of the right ventricle in such cases was really that of the left, the whole organ being pushed out of its natural position towards the epigastrium, and the left ventricle thus occupying the usual place of the right. Dr. Law remarked how extremely rarely he had met with examples of hypertrophy of the right ventricle; he might almost say, the only unequivocal instances were

where there was either an open foramen ovale, or an imperfect septum ventriculorum. He therefore attributed the hypertrophy in such cases to the stimulating quality of the blood, while he referred the absence of hypertrophy, even under conditions and circumstances calculated to induce it, to the venous blood, which was wanting in that property which was the proper stimulus of muscular action. Dr. Law believed that it was to this unstimulating or even sedative character of venous blood that the lungs owe their safety from the action of the heart, which might be expected to be strongly excited on every occasion of either temporary or permanent obstruction to the course of the blood through them. If the lungs had not some protection of this kind, their proximity to the heart would expose them to great and frequent danger; and nature would appear to have been less careful to provide for their safety than she was for that of the brain, which, although placed at a greater distance, she sheltered from the strong action of the heart, by the arrangement of the artery leading to it.

Dr. Law thought that the lung owed its security against the danger that it might be thought to be exposed to from the heart—1°, to the unstimulating quality of the blood in the right ventricle; 2°, to the arrangement of the vessels in the lungs, somewhat resembling a *rete mirabile;* 3°, to the imperfect tricuspid valve, which afforded a certain measure of relief.—*April* 14, 1866.

Aneurism of the Aorta.—Dr. Hayden, submitted to the society an example of aneurism of the ascending portion of the arch of the aorta, of very considerable size. The patient was a man aged thirty-three years, and of intemperate habits. He was admitted into hospital on the 12th of February; and he stated that his health had been uninterruptedly good until he met with an accident, which consisted in his being knocked down by a cab, while under the influence of drink, two years previously. He was stunned by the blow, but recovered, as he thought, perfectly. Six weeks before admission he felt a pain in the upper part of the chest, on the right side; about three weeks subsequent to this date he observed a pulsating swelling in the same situation. When he (Dr. Hayden) saw him on the 12th of February, he was pale-looking, well nourished, apparently in good health, slept well, and lying down without embarrassment of breathing. His pulse was 84, perfectly regular, of moderate volume, and equal on the two sides. The pupils were normal and equal. He complained of pain in the chest, extending to the shoulder. On examining the man's chest, Dr. Hayden was struck by the presence of a considerable prominence at the upper and anterior part of the right side; it was semi-globular in figure, and projected about an inch and a half in advance of the opposite side, closely resembling the female breast, elevated somewhat above its natural situation. Over this prominence, which

extended vertically from half an inch below the clavicle nearly to the nipple, and from the right margin of the sternum horizontally outwards, measuring in both diameters about three inches, dulness was complete; there was to the same extent absence of respiratory sound, and the hand placed over it experienced a double shock—the first strong, and coincident with the cardiac impulse, or a little posterior in time; and the second, distending or elevating the tumour less, and apparently a back-stroke, received by it in the act of recoiling. In the same situation a double sound was heard; both sounds were remarkably clear, and synchronous with those of the heart, and entirely free from murmur; the impulse was stronger in the outer than in the inner portion of the tumour, and was here diastolic. Elsewhere over the right side, and over the entire of the left, percussion sound and respiration were normal. The apex beat was in the sixth intercostal space, half an inch externally to the nipple; there was no increase of precordial dulness, and no cardiac fremitus. The first sound, as heard over the apex, was somewhat soft and prolonged, but without distinct murmur; over the base, however, a sharp "whiffing" murmur was heard to accompany the first sound; it was loudest in the area of the pulmonary artery, viz., at the sternal extremity of the second left costal cartilage, but was universally diffused over the left side anteriorly; it was audible, however, only during the latter part of expiration, and the early part of inspiration, being entirely inaudible at the acme of inspiration, and in the early period of expiration, and likewise to the right of the mesial line. Posteriorly, respiration was somewhat louder on the left than on the right side; and over both sides a double sound, synchronous with those of the heart and tumour, was heard, but no murmur. No impulse was perceptible behind, nor was there anywhere tenderness on pressure.

As regarded the diagnosis, there was no difficulty. The sac of the aneurism was manifestly filled with fluid blood, for it was possible by firm pressure with the fingers to reduce the bulk of the tumour. There was neither dysphagia, nor dyspnea, even in the recumbent posture. Severe pains were occasionally complained of, extending to the right scapula, and depriving the patient of sleep; these were invariably and effectually relieved by one or two leeches applied to the part affected, and the administration of forty drops of the solution of hydrochlorate of morphia. The pulse varied from 78 to 96, and was regular; the decubitus was on the right side, and slight œdema existed, in consequence, in the right shoulder and axilla; slight pressure caused murmur in the abdominal aorta, visible pulsation, and double sound, but no murmur in the carotids.

The condition of the man underwent very little alteration from the 12th of February to the 14th March, during which time he had been taking iron; on the latter day Dr. Hayden remarked that the tumour had advanced considerably in the direction forwards and outwards; there was

œdema of the right side, extending to the forearm, where sharp pain was complained of; pulse 96; the tumour had become more solid, but action in it was strong and bounding. The iron was now stopped, and in place of it digitalis was given, and two leeches were applied in the axilla. On the 19th March the pain was so severe as to produce copious perspiration; breathing was now somewhat embarrassed, even in the sitting posture. The tumour was now much more prominent, and uniform on the surface; it projected two inches in front of the normal level.

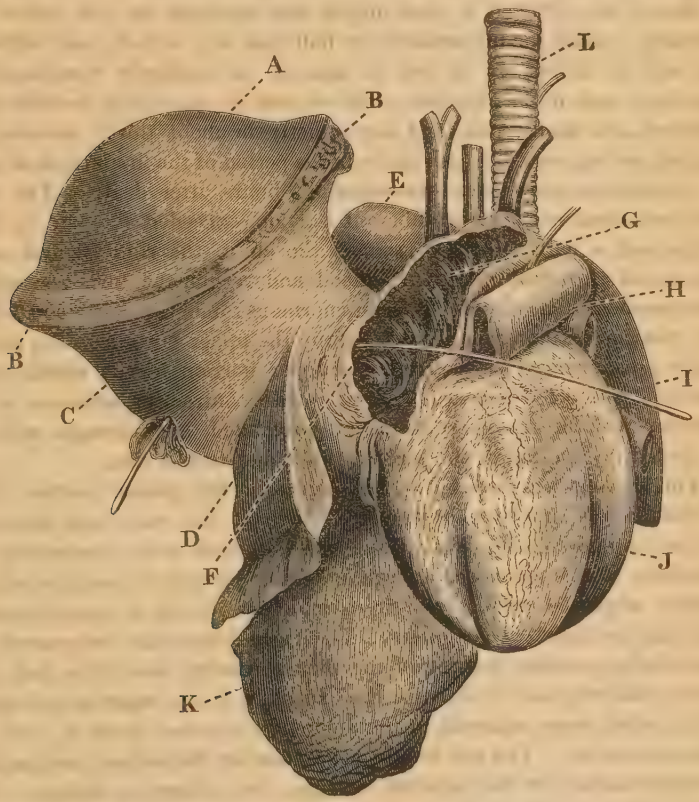
On the 23rd of March there was dulness over the lower part of the right side, where likewise respiration was feeble, and somewhat bronchial.

March 25.—Passed a good night, and declared he felt better this morning; called for his medicine at half-past six o'clock, and whilst in the act of sitting up in bed to take it, he suddenly complained of agonizing pain in the abdomen, cried out that he was dying, became much agitated, and deadly pale, and died quietly in about thirty minutes, the tumour having ceased to pulsate from the period of the first attack of pain.

Post mortem examination—twenty-eight hours after death.—The right side, measured over the protuberant portion, exceeded the left by three inches and a half. On laying open the chest, the right pleural cavity was found filled with coagulated blood and serum, the former weighing three pounds. On removing this, an enormous tumour, as large as the head of a newborn infant, was seen to occupy the upper portion of the pleural cavity; it appeared to rise from the upper portion of the middle mediastinum; projected forwards and outwards, contracting adhesion to the anterior wall of the chest, which it protruded, and through which it projected, by erosion of the second, third, and fourth ribs.

This tumour was invested by the pleura in the greater portion of its circumference, and was unsupported save at the root, and inferiorly, where the middle lobe of the lung was attached to it; posteriorly and inferiorly to this point was a large and irregular rent, through which two fingers might be passed, and from which projected a jagged mass of partially decolourized coagulum. The right lung was compressed into the inferior posterior portion of the pleural cavity, was of a dark slate colour, and emptied of air, with the exception of the superior and middle lobes, which were adherent to the tumour, expanded upon it, and contained some air. The left lung was vascular on the surface, and partially emphysematous on the anterior margin, but otherwise healthy. The pericardium contained about two ounces of serum; the heart presented a good deal of superficial fat at the base, and a thick layer in front of the ascending portion of the arch of the aorta. On the right muscular appendix was a large "milk spot," and a similar one existed in the usual situation on the right ventricle; on the anterior and inferior surface of the left ventricle was a nodule of white adherent lymph, of the size of a small pea; the right cavities were normal; the left ventricle much thickened, and diminished in capacity. The valves were all in a healthy

condition, except the sigmoid of the aorta, which were thickened, and permitted the slow return of water into the ventricle. The lining membrane of the aorta was rugous, and of a dirty yellow colour; and in the right wall of the ascending portion of the arch, one inch to the cardiac side of the origin of the arteria innominata, was found a large and somewhat circular opening, admitting the points of three fingers, which led into a large aneurismal tumour. The sac of the aneurism was partially filled with coagulated blood, which was adherent to its anterior wall, and protruded through the rent; this rent (through which a wire is represented as passed in the woodcut) was distant about two inches from the



A Aneurism projecting through chest-wall, the integument, fat, and pectoral muscles having been removed by dissection.

B, B Section of sternum and ribs encircling the projecting aneurism.

C Intra-thoracic portion of aneurism, exhibiting a rent in its posterior inferior wall, by which the fatal hemorrhage took place, and through which a jagged clot, and the end of a bent probe are seen to project.

D Middle lobe of right lung, attached by adhesion to aneurism.

E Apex of right lung, projecting behind aneurism.

F Aperture in aorta, leading into aneurism, through which a probe is passed.

G Aorta laid open by removal of its anterior wall, exhibiting atheromatous condition of its coats, and great vessels arising from it.

H Left pulmonary artery and bronchus. Pneumogastric nerve is seen coursing down behind them.

I Descending and thoracic aorta crossed by one of the left pulmonary veins.

J The heart, exhibiting much fat on its anterior surface.

K Inferior lobe of right lung, compressed by the blood effused in the fatal hemorrhage.

L The trachea and left recurrent nerve.

orifice of communication with the aorta. The pulmonary artery and its valves exhibited no departure from the state of health; the three great vessels arising from the arch of the aorta were unaffected; the œsophagus was not compressed or altered in its course, but both pneumogastric nerves seemed much thickened.

The following measurements of the heart were taken ninety-six hours after death:—

Thickness of walls of left ventricle.	Near apex,	$\frac{3}{4}$-inch.
	Middle portion,	$\frac{13}{16}$-inch.
	Near base,	$\frac{3}{4}$-inch.
Dimensions of left ventricle.	Length of cavity from root of mitral valve to apex,	2 inches.
	Width of do. in central part, measured from septum,	$\frac{1}{2}$-inch.
	Do. of do. at base,	$\frac{3}{4}$-inch.

The vena cava descendens and the venæ innominatæ had entirely escaped pressure, as had also the right bronchus, the œsophagus, and the great vessels arising from the aorta; hence there was no venous engorgement of the upper portion of the body, no dysphagia, and, where the aneurism did not intervene between the chest wall and the lung, no loss of respiratory sound. The compression of the inferior portion of the right lung was due to the sudden effusion of blood which took place half an hour before death.

The right side of the heart was normal; the left ventricle was hypertrophied, and its cavity rather diminished. Dr. H. did not see how it could be denied that this was an example of concentric hypertrophy. In the central portion, the wall of the left ventricle was thirteen-sixteenths of an inch in thickness; at the apex, and also at the base, it was three-fourths of an inch. The length of the left ventricle was two inches, and the width from the septum to the left side only half an inch, the measurement being taken when the parts were placed as nearly as possible in a natural position, and ninety-six hours after death, when *rigor mortis* must have ceased. The mitral valves were perfectly healthy, but the aortic were partially contracted. It was found on pouring water into the aorta that it returned into the left ventricle, but the return was very slow—the valve was insufficient, rather than diseased.

Some very high authorities held that concentric hypertrophy was always connected with disease of the mitral and aortic orifices. Here there was concentric hypertrophy, but no disease of the mitral orifice, and only partial disease of the aortic orifice. The question was, what had determined the thickening of the walls of the left ventricle without dilatation? The answer could be only hypothetical His own idea was, that it was due to the presence of the aneurism in close proximity to the aortic orifice. Up to a period shortly anterior to death, there was no coagulum. The cavity would contain, when distended, perhaps two pints of blood, and the left ventricle had to fill this cavity to distention,

or rather to throw additional blood into it to the amount necessary for that purpose, before filling the other vessels, hence thickening of its walls. Then, again, the condition of the aortic orifice, although admitting of partial regurgitation, was not sufficient to determine dilatation of the left ventricle in connexion with hypertrophy caused by increased action.—*April* 14, 1866.

Disease of the Mitral and Aortic Valves; Hypertrophy of the Left Ventricle.—Dr. Jennings detailed the following case:—John Martin, aged 22 years, had, about three years ago, suffered from an attack of acute rheumatism, at an early stage of which well-marked symptoms of cardiac complication manifested themselves. From this illness his recovery, notwithstanding the prompt employment of active treatment, was but very partial. The heart's action continued excited; and in a short time a single soft systolic bellows'-sound become audible over the mitral area. After the lapse of about two years, during which the original systolic bruit gradually became much louder and also distinct along the aortic arch, and the extent of cardiac dulness greatly extended, he had a second attack of rheumatic fever, which was followed by a convalescence still more tedious and imperfect than the former. The heart's rhythm became stronger, and more tumultuous, while the pulse was small, rapid, and irregular, and the face livid and bloated. The slighest exertion induced distressing palpitation, and during the last three months of his life he suffered from constant orthopnea and extreme anasarca. At no period could inter-scapular murmur be distinguished; and during the last month the complete disappearance of morbid sounds would have prevented any person who had not seen the case at an earlier stage from diagnosing the precise form of cardiac lesion under which the patient was suffering.

Autopsy.—On opening the thorax, the lungs were found intensely congested, and the posterior part of the right was occupied by apoplectic extravasation. The heart was enormously enlarged, the increase being principally confined to the left ventricle, which constituted fully half the size of the entire organ, its cavity being capable of containing a large goose egg. The lining membrane was thickened and glistening; its muscular columns were greatly hypertrophied, and the chordæ tendineæ singularly rigid. Both the mitral and aortic apertures were considerably contracted, admitting with difficulty the extremity of the index finger. The mitral valves were much thickened; and those of the aorta were contracted and cartilaginous, and presented a central deficiency, triangular in outline, permitting the easy passage of the tip of the little finger. The calibre of the aorta was greatly reduced, the descending portion of the arch being scarcely one-half inch in diameter. The tricuspid and pulmonic apertures and valves were healthy.

Dr. Jennings said, that several observers had directed attention to the circumstance that many cases of cardiac disease in their advanced stages,

and some even during every period of their course, may be unattended with any morbid murmur, the most frequent of such instances being, unquestionably, narrowing of the mitral orifice, in most cases of which, murmur, when present, is connected with a less advanced stage of contraction, and depends on imperfect closure of the valves, and therefore must generally be, as in the present instance, systolic in character.—*April* 14, 1866.

Rupture of the Biliary Duct.—Dr. M'Swiney presented to the notice of the society an example of this very rare lesion. It was taken from the body of a man forty-five years of age, a bricklayer, who was brought to Jervis-street Hospital, on April the 14th, in a state of collapse and apparently moribund. Restoratives were employed, and after some hours reaction set in. Dr. M'Swiney saw him shortly afterwards, and received from him the following history of his case. He stated that he was awakened from sleep on that morning, at an early hour, by a very severe pain in his epigastric and right hypochondriac regions, with a feeling as if he wanted to evacuate the bowels. He went to the closet, but did not succeed in passing anything. He became gradually worse, with intense pain; and after the lapse of an hour or two vomiting set in; at noon he was taken to hospital; he further stated that he had recently suffered great privations; he was out of employment for some twelve or fourteen weeks, and declared that he endured what he called "downright starvation." He was suffering excruciating pain in the hepatic and hypogastric regions, and was vomiting a brown fluid, not stercoraceous, although it had the appearance as if feculent matter were mixed with it. The bowels were absolutely confined, and the secretion of urine suppressed; his pulse was very feeble, and almost imperceptible. He made several attempts to pass the contents of his bowels, feeling an inclination to go to stool, but ineffectually. In forty-eight hours after entering the hospital, and fifty-eight after the first attack, he died.

In making the *post mortem* examination, the abdominal cavity was the only one opened; the peritoneal sac was found to contain several quarts of fluid, which was stained dark green by bile. A very remarkable appearance was presented on the right side upon the parietal peritoneum, and also on the surface of the great omentum. The entire upper surface in contact with the liver, and in the neighbourhood of the liver, was coloured of the brightest yellow, as if it had been painted over with chrome yellow. The question at once arose, how the bile had become effused? He should have said that the gall bladder was perfectly empty and flaccid. There was no ulceration or rupture to be discovered in it; but a careful investigation soon enabled him to trace the common duct for the greater part of its length, and it was found to have been ruptured within about three-fourths of an inch of its entry into the duodenum, and just at its junction with the

pancreatic duct. About twelve inches from its termination the ileum became, quite suddenly, remarkably diminished in calibre and continued in this contracted and almost impervious condition down to its entrance into the cecum. Professor R. W. Smith had carefully examined the specimen, and was of opinion that the contraction had been the result of some morbid process of an obscure character; it was clearly not a congenital malformation of the tube; there was nothing to account for its occurrence, if it were not due to the intense spasms and pain which the man suffered during the acute attack of peritonitis. He believed that rupture of the common duct was a rare occurrence; and that when rupture took place, either in the gall bladder or in the ducts, it was generally due to the ulceration produced by a gall stone. These ulcerations were, for the most part, confined to the gall bladder; in the present instance there was no solution of continuity in the gall bladder, for it was inflated, as might be seen, for the purpose of showing its integrity; and there were no gall stones present in any part of the biliary apparatus, nor had the patient manifested during life any of the symptoms usually supposed to indicate the existence of calculi obstructing the ducts; there was no jaundice present during any period of his illness.

It was now a well-ascertained fact, that long privation of food usually caused an accumulation of bile in the gall bladder to an enormous extent. Taking this into consideration, along with the statement of the patient that he had suffered under prolonged deprivations of food, Dr. M'Swiney was induced to believe there was a violent and sudden rupture of the common duct, arising from over-distention, and that it occurred at the time when he was awakened from sleep (as he had detailed) by intense pain. That was, of course, but conjecture; but in the absence of any other reasonable explanation, he presumed to offer it as the solution of the difficulty. The omentum, it would be observed, was exceedingly fatty for a man suffering from starvation. He begged of his colleague, Dr. Hayden, to be good enough to look at a section of this yellow-coloured matter (so thickly pasted over the omentum, &c.) under the microscope, and to compare it with a section of some of the same substance which was not coloured. Dr. Hayden had written to him as follows:—"The layer of yellow matter in the great omentum consisted of fat deposited in granular masses, coloured deeply yellow with effused bile; in several of the fat cells thus coloured were seen crystals of margarine; the fat cells acted on by the bile seemed in most instances broken up, and in this respect contrasted with the uncoloured cells."—*April* 21, 1866.

Cirrhosis of the Liver.—Dr. Hayden exhibited the thoracic and abdominal viscera, taken from the body of a female aged forty-two, who was admitted into the Mater Misericordiæ Hospital, October 3rd, 1865.

She stated that her health had been good till twelve months previously, when she coughed up a large quantity of dark blood; this she ascribed to the stoppage of the menstrual discharge, which occurred about that time; she had frequently since discharged blood, and on each occasion felt a peculiar, tinkling sensation in the left side of the chest; there had been no hemorrhage, however, for the six months preceding her admission. She had never been jaundiced, but about the period of the first occurrence of hemorrhage; her feet became swollen, and then her abdomen; he could not trace the abdominal enlargement from any particular point. At the date of her admittance into hospital her condition was the following:—She was very much emaciated; her face was of a dusky, pallid hue; the sclerotics white, tongue clean and moist, abdomen greatly enlarged, dull on percussion, tense and fluctuating; abdominal veins not enlarged; feet slightly œdematous; urine passed in moderate quantity, and free from albumen. There was cough with mucous expectoration; pulse quick and weak; respiration easy; the chest was universally resonant; respiration normal, but accompanied by mucous râles; heart's action and sounds normal.

After the patient had been a short time in hospital, it became necessary to perform paracentesis abdominis, to relieve her breathing, which had become greatly embarrassed; between five and six gallons of clear, amber-coloured fluid were removed. The abdomen so rapidly refilled, that the operation became necessary again three weeks subsequently, when a similar quantity of fluid, of the same character, was taken away. The patient had occasionally complained of pain in her left side; this she described as being of a shooting character, and extending from the left lumbar region upwards through the chest; the pain was more urgent after the last operation. About this time she coughed up a large quantity of puriform matter, which it was thought might have proceeded from an abscess of the liver, discharging itself through the lung.

About the 1st of December the left side of the chest became dull inferiorly, whilst the upper part yielded a somewhat tympanitic sound; the dulness gradually extended upwards; the heart was displaced towards the right side, and respiration became more embarrassed.

On December 12th the notes of her case show the following to have been her condition:—Decubitus on the left side only; pulse 104, and weak; respiration, 42; total loss of appetite and rest; left side of chest dull from second rib downwards in front; here the respiration was bronchial, and without vibration; above second rib, resonance highly tympanitic, and respiration and voice loud and ringing; posteriorly on the left side there was dulness, and absence of the respiratory sound, and of vocal fremitus below the angle of the scapula; above this level the respiration was tubular, and the dulness less marked; the heart pulsated to the right of the sternum.

On the 18th of December paracentesis was performed for the third time; about an equal quantity of a similar fluid was removed as on the previous occasions; the operation gave her comparatively little relief; pain in the left side and down the left arm was now most severe; there was, moreover, extreme tenderness over the left side of the chest anteriorly; this was most acute a little below and to the outside of the nipple, and beneath the clavicle; perspiration profuse.

December 22nd.—The left side exceeded the right in girth by two inches; physical phenomena unaltered, save as regards subclavicular resonance, which was less tympanitic; respiration and resonance were normal on the right side, or somewhat exaggerated. The spleen was felt firm and enlarged; no enlargement or other alteration of the liver could be detected by the touch; appetite good; pulse, 90; respiration, 30.

December 26th.—Muco-crepitus on the left side anteriorly; great fetor of the breath; slight enlargement of the superficial veins of the left side of the chest.

On the 27th of December the percussion note beneath the left clavicle was of the normal character, but slightly clearer than on the opposite side; and respiration was less loud, and accompanied with muco-crepitus in this situation; below the second rib dulness was complete, and no respiratory sound of any kind could be heard.

Early in February paracentesis was performed a fourth time; the fluid removed was similar in quantity and appearance to that previously described.

On the 27th tympanitic resonance was again present in the left subclavicular region, *i. e.*, to the level of the second rib, and on the following day dulness existed in this situation.

On the 2nd of March there was tympanitic resonance from the clavicle to the second rib, and as far as the middle line of the sternum horizontally; from the upper edge of the second to the upper edge of the third rib the resonance was less tympanitic, but below this level dulness was absolute.

The case was deemed one of considerable difficulty as regarded diagnosis, and no positive opinion was arrived at.

March 15th.—Paracentesis was performed for the fifth time; eight gallons of amber-coloured serum, containing much albumen, were drawn off; the patient, notwithstanding her great debility, bore the operation well. For several days preceding the operation resonance had been clear, but normal, in the left subclavicular region. On the 16th of March peritonitis of a subacute form set in, accompanied by vomiting, flatulent distention, &c., and acute tenderness of the abdomen.

March 19th.—The left side of the chest was now resonant throughout in front; the resonance was only exaggerated normal resonance; beneath the clavicle was felt a painfully sharp vocal thrill.

March 27th.—Copious night sweats set in; and, on April 9th, great

fetor of breath, and diarrhea. She died on the 18th of April; the physical signs on the left side of the chest having continued unaltered as on the 19th of March, and the heart having returned to the left side, and occupied a position a little above its usual level, as indicated by its pulsation to the inner side of the left nipple. The patient had been sinking for several days, being literally worn out by diarrhea and bed-sores which had latterly formed; shortly before death, she vomited up a large quantity of dark blood.

Autopsy.—Body much emaciated; a large quantity of greenish opaque fluid in the peritoneal cavity, with flakes of curdy lymph floating in it; the abdominal viscera were all firmly agglutinated to one another, and to the abdominal walls, by thick layers of false membrane; the parietal peritoneum was throughout coated with a similar layer, as thick as shoe-leather; the liver, which was firmly attached to the diaphragm by recently effused lymph, rather exceeded in volume the normal size of that organ, and afforded a good example of cirrhosis with fatty degeneration, being pale and granular on the surface, and in section devoid of vascularity, and thickly mottled with masses of yellow fat; examined microscopically with a magnifying power of 222 degrees, the hepatic substance was found to be devoid of blood; the hepatic cells were gorged with fat globules, which in most instances rendered the nuclei invisible; large oil globules were dispersed over the field; the colouring matter of bile was present in very minute quantity.

The spleen was of a dark slate-colour, and at least twenty times its ordinary volume; the mucous membrane of the large intestine was of a dark chocolate colour, and softened; the pelvic organs were all in a healthy condition.

The pericardium contained no fluid; the heart, which was of the ordinary size, presented a good deal of superficial fat. Both pleural cavities contained fluid; on the right side this was small in quantity and of a pale green colour, but clear; on the left side it nearly filled the pleura, and was of the colour of whey. The right lung was slightly emphysematous on its anterior margin, and hypostatically congested posteriorly, but otherwise in a healthy condition; the left lung was adherent to the anterior wall of the chest superiorly, and to the cone of the pleura; this portion (the superior lobe) of the organ was of the ordinary volume, and resonant on percussion; but the inferior lobe was compressed into the posterior inferior portion of the pleural cavity, where it was bound down, and generally coated over, by a thick layer of false membrane; it was much reduced in volume, solid, and dull on percussion.

The tympanitic resonance occasionally present beneath the left clavicle during the patient's illness, as previously noted, and which led to so much speculation in regard to its cause, was manifestly due (for there

was no other cause that could have given rise to it) to the presence in this situation of the superior lobe of the lung, where it was confined by adhesion, and subjected to the varying pressure, according to the quantity, of the liquid which occupied the lower portion of the pleural cavity, as well as of the peritoneal effusion exercised through the diaphragm. When the liquid in the pleura increased, or the diaphragm was pressed upwards by the ascites, stasis of air in the superior lobe was the consequence, which then yielded, through that portion of the chest wall to which it was attached, a tympanitic sound; but when it was allowed to expand by removal of pressure from below, whether by the operation of paracentesis, or by more active excretion through the kidneys, &c., it yielded a resonance and respiratory sound, exaggerated only because of its close attachment to the thoracic wall.

The liver was the seat of the primary disease in this case; the spleen became hyperemic and hypertrophied in consequence of the obstruction in the liver, as noticed by Professor Smith many years since; and owing to retarded or obstructed portal circulation in both these organs, ascites was superadded, and hematemesis occurred. In the further progress of the case effusion took place into the pleuræ; and on the left side, owing to the pre-existence of old pleuritic adhesion of a somewhat peculiar kind, the pleural effusion gave rise to physical phenomena of a novel and very embarrassing description.—*April* 21, 1866.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE COLLEGE OF PHYSICIANS.

Dr. Beatty, President.

Dr. Madden's *Paper on Insanity.*

(*Continued from page* 230.)

However, although insanity is too often punished as crime, on the other hand, crime sometimes shelters itself under the disguise of insanity. For my part I am not one of those who share Lord Hale's opinion, that "all crime is the result of partial insanity:" a dogma which appears to me not only subversive of the principles of all religion, and dangerous to society, but at variance with common sense.

Mere passion is not madness. Nor should any, so called, irresistible impulse, not connected with a diseased brain; nor any emotion or custom which is not of itself a proof of insanity, be considered as conferring immunity from the just punishment of crime. None are free from passions or impulses, which if they be not checked may become almost irresistible from habit, and may lead to crime. But in such cases the perpetrators of crimes being accountable for the acts by which the control

over the passions was originally weakened, they are equally accountable for all the consequences that may arise therefrom. A madman is not thus responsible, not being answerable for the diseased action in his brain whence the insane act proceeds.

The law of England, as laid down by the judges in their reply to the queries of the House of Lords on this subject, is—that if the perpetrator of an action is capable of distinguishing right from wrong at the time he committed it, he is legally responsible for it, even though he may be partially insane. The following are the words of this decision:—1st. "Notwithstanding that the party committing a wrong act, when labouring under the idea of redressing a supposed grievance, or injury, or under the impression of obtaining some public or private benefit, he was liable to punishment.

2nd. "That before a plea of insanity should be allowed, undoubted evidence ought to be adduced that the accused was of diseased mind, and that at the time he committed the act he was not conscious of right or wrong." . . . . "Every person was supposed to know what the law was, and therefore nothing could justify a wrong act, except it was clearly proved the party did not know right from wrong. If that was not satisfactorily proved the accused was liable to punishment."

The 3rd question was not answered, and as it was purely legal need not be quoted.

4th. "The judges were unanimous in opinion, that if the delusion was only partial, that the party accused was equally liable with a person of sane mind. If the accused killed another in self defence he would be entitled to an acquittal; but if committed for any supposed injury he would then be liable to the punishment awarded by the laws for his crime."[a]

The 5th and last question refers to the examination of experts as to the patient's state of mind at the time when he committed the crime, and, with the exception of Justice Maule, it was decided that the question was one for the jury, and should not be put to the witness except under certain special conditions.

Similar views have been at all times promulgated from the judicial bench in England. On the trial of Arnold, in 1723, for shooting at Lord Onslow, Mr. Justice Tracy stated that a lunatic to be exempted from punishment for his acts "must be a man that is totally deprived of his understanding and memory, and doth not know what he is doing no more than an infant, than a brute, or a wild beast."[b] In 1812 Mr. Justice Le Blanc, in a case of murder tried before him at the Old Baily, instructed the jury thus:—"Provided you should be of opinion that when

[a] Hansard's Parliamentary Debates, 1843.

[b] Hargrave's State Trials, 322; and Collinson on Lunacy, Vol i., p. 672.

he (the prisoner) committed the offence he was capable of distinguishing right from wrong, and was not under the influence of such a delusion as disabled him from distinguishing a wrong act, in that case he was answerable to the justice of his country, and guilty in the eye of the law." Chief Justice Mansfield, in his charge in the case of Bellingham, who was tried for the murder of Mr. Percival, told the jury that if the prisoner fancied the existence of an imaginary injury, and sought redress for this by some illegal act, but "was capable in other respects of distinguishing right from wrong, there was no excuse for any act of atrocity he might commit under this description of insanity;" and Lord Lyndhurst, on the trial of Offord in 1831, expressed his coincidence with Chief Justice Mansfield's charge; and, further, informed the jury that they would not be justified in acquitting the prisoner on the ground of insanity unless they could answer this question in the negative, viz.:—"Did the prisoner know that in committing the act he offended against the laws of God and man?"[a] Sir William Follet, then Solicitor-General, who prosecuted M'Naughten for the murder of Mr. Drummond in 1843, stated the law to be that "to excuse him (the prisoner) it will not be sufficient that he laboured at the time under partial insanity, that he had a morbid disposition of mind which would not exist in a sane person; that is not enough; if he had that degree of intellect to enable him to know and to distinguish right from wrong, if he knew what would be the effect of his crime, and if with that consciousness he wilfully committed it."[b]

On the memorable trial of Townley, convicted of the murder of Miss Goodwin in 1863, Baron Martin addressing the jury said:—"In his opinion the law was best laid down by Justice Le Blanc, as able a judge as ever sat on the bench. Justice Le Blanc, in the case alluded to, observed to the jury that it was for them to determine whether the prisoner, when he committed the offence with which he stood charged, was incapable of distinguishing right from wrong, or under the influence of any illusion which rendered his mind insensible of the nature of the act he was about to commit. Since in that case he would not be legally responsible for his conduct. On the other hand, provided they should be of opinion that when he committed the offence he was capable of distinguishing right from wrong, and not under the influence of such an illusion as disabled him from discerning that he was doing a wrong act, he would be amenable to the justice of his country, and guilty in the eye of the law."[c]

This "knowledge of right and wrong" which is made the legal proof of criminal responsibility is, perhaps, as fallacious a test of mental

[a] Corrinton and Payne's Reports, Vol. v., p. 168.
[b] Annual Register, 1843—Law Cases, p. 347.
[c] Annual Register, 1863—Law Cases, p. 308.

sanity as could well be devised. The majority of the inmates of our lunatic asylums have, to a certain extent, the power of distinguishing between right and wrong. For they often adopt precautions and practice concealment when doing acts they know to be wrong, thus clearly showing that they are aware of the impropriety of their conduct, and are anxious to escape its punishment. And yet, such patients may, in other respects, be obviously insane.

The expounders of our law appear to me in this point to confound conscience with consciousness. How is this abstract "knowledge of right and wrong" to be decided? Is it by the conscience of the accused? or by public opinion which differs so widely in different times and places? or by the civil law, which in one state makes that a crime which in an adjoining country may be none? Is the question to be tried by the divine law, acting in self-supposed conformity to which men, otherwise of sane mind, have conscientiously perpetrated actions which the great bulk of mankind regard as reprehensible. Surely, therefore, the so-called knowledge of right and wrong cannot, of itself, be regarded as a sufficient test of sanity and consequent responsibility.

It would be easy to quote numerous cases in illustration of the consequences of the inhumane law that has reigned and still is enforced in England, with reference to criminal lunacy. I shall, however, content myself with alluding to some of the most notorious cases in which either the sentence of death has been pronounced, or has actually been carried into execution on persons in the state of madness.

It will hardly be necessary before giving these cases to prove that it can be neither lawful nor expedient to inflict punishment on a lunatic. Although I might quote curious passages from Hansard's Parliamentary Debates (Volume 67) to show that this practice has been vindicated by a Right Rev. Prelate who undertook the Christian office of proving that dangerous lunatics should be dealt with after the fashion of mad dogs, and should be destroyed for the good of society. But as this humane sentiment is not often so explicitly avowed, I shall merely quote the words of two eminent lawyers:—

"The only way to look at the punishment of death," says Lord Wharncliffe in his evidence, "is to say—is it an example or not? If an example, it is defensible; if it is not, it is not defensible."[a] There can be no question that a madman, not being under the dominion of reason, cannot be acted upon by the force of example, and thus deterred from an insane act. And, therefore, any punishment is unjust; for, as Mr. Stephens says—"The end or final cause of human justice is not, by way of atonement or expiation for the crime committed—for that must be

[a] Evidence of Lord Wharncliffe—Commissioners Report, 1836, p. 96.

left to the just determination of the Supreme Being—but as a precaution against future offences of the same kind."[a]

It seems to have been generally admitted that Bellingham, who was tried for the murder of Mr. Percival, was improperly executed, the application of his counsel for a short postponement having been refused, although witnesses could have been then produced to prove clearly his insanity. The case of Bowler affords another example of the execution of a madman subject to epileptic fits, and exhibiting all the symptoms of mania. Baron Alderson afterwards, at the trial of Oxford, justly remarked, with reference to the last case:—"Bowler was executed, I believe, and very barbarous it was." In the case to which I have already referred, which was tried before Mr. Justice Le Blanc, at the Old Baily, 1812, a prisoner was charged with shooting at a man named Burrowes, and although a commission of lunacy had found him insane only one month before he committed the offence, still the jury brought in a verdict of guilty, and he was accordingly condemned and executed.

John Barclay who was executed at Glasgow in 1833, was also of unsound mind. He was familiarly known as "Daft Jack." The clergyman of the parish had always regarded him as imbecile. He thought that a watch was a living animal; and that there was no distinction between killing an ox and killing a man. Yet, although Barclay's weakness of mind was recognised both by the judge and by the jury, who, on that ground recommended him to mercy, still he was condemned and executed on the plea, forsooth, that "he knew right from wrong."

John Howison, who was tried before the High Court of Justiciary in Scotland, in December, 1831, and convicted of the murder of the widow Geddes, and subsequently executed—was undoubtedly insane. He was a peddler, and up to a certain period was a man of orderly habits and ordinary manners; immediately after a fever his habits changed completely. He became morose, silent, fond of solitude, and superstitious, wearing a Bible tied to his head, or dangling from his wrist. He sprinkled salt on his bed, and used to sit for hours brushing away imaginary flies. His appetite became enormous, and he contracted a craving for blood, and would eat an incredible quantity of bullock's liver nearly raw, and slept always with weapons under his head. At one time he became a Quaker, but during the worship would sit muttering to himself, and running pins and needles into his wrists and arms, would suck the blood with great gusto. Moreover, he complained of pain and uneasiness in the head. The crime for which he suffered was apparently quite motiveless; and he accused himself of eight other murders, none of which had ever occurred.[b]

[a] Stephens—New Commentaries on the Laws of England, Vol. iv., p. 64.
[b] Edinburgh Medical and Surgical Journal, Vol. xxxviii., p. 51.

In 1862 Charles Fokes was tried for the murder of Daniel Stone at Walditch on the 29th of August. Immediately after the murder he had atttempted to shoot himself. There appeared to be no motive for the act, except that he had some vague notion that people, and his victim among the number, laughed and jeered at him. Dr. Tuke, who examined the prisoner, said:—"My examination left no doubt on my mind but that he is at this moment of unsound mind. . . . . I do not believe him responsible for his actions." The judge's charge in this case was the strongest proof of the incompetency of an unprofessional tribunal to deal with cases of lunacy. He told the jury:—"Although you may be satisfied that this man had some insane delusions; yet if at the time he did this act he knew the nature of that act, and what the consequence would be, and also that it was wrong, then it is your duty to find him guilty." This criminal lunatic was accordingly found guilty, and sentenced to be hanged.

At the Maidstone Assizes, at the same time (1862) a lad aged eighteen, named Burton, was tried for the murder of a boy, between nine and ten years old, on the Chatham Railroad. The prisoner had given himself up voluntarily. There was no cognizable sane motive whatever for the crime. The prisoner having expressed an insane desire of being hanged, had apparently committed the murder solely to accomplish that object. Burton's mother had been twice in a lunatic asylum; his brother was foolish; and he himself was generally considered of weak mind. Medical evidence was given which sustained this opinion. But Mr. Justice Wightman, in summing up, is reported to have said, that the prisoner "was supposed to desire to be hanged, and in order to attain that object committed murder. That might show a morbid state of mind but not delusion. Homicidal mania, again, showed no delusion." So, accordingly, Burton was found guilty, and sentenced to be hanged.

George Victor Townley, who was sentenced to death at the Derbyshire Winter Assizes in 1863, for the murder of Miss Goodwin, a young lady to whom he had been engaged to be married, was described as being "a man of very quiet and refined manners, a good linguist, and an accomplished musician." The defence set up was insanity. Some members of the prisoner's family were proved to have been mad. Dr. Winslow in his evidence said:—"His (the prisoner's) moral sense was more vitiated than I ever saw that of any other human being. . . . . I think that at this present moment he is a man of deranged intellect." Similar evidence was given by others; and his conduct after the murder, when he gave himself up to justice, assisted to carry home the body of Miss Goodwin, and then took tea with her grandfather, was also ably set forward by his counsel as proof of insanity. The jury, however, took only five minutes to consider the case, and returned a verdict of guilty, and he was sentenced to death. The presiding judge, Baron Martin, next day

made a communication to the Home Secretary, the result of which was that forty-eight hours before the time fixed for his execution he was examined by the Commissioners in Lunacy, who reported, "that (for certain reasons given) the prisoner could *not* be considered as being then of sound mind; but that according to the law, as laid down by Baron Martin, which was in accordance with the highest legal authorities on the subject, he was responsible for his actions!!!" Most fortunately the same post brought a certificate, signed by three magistrates and two medical men, in accordance with the 3rd & 4th Victoria, cap. 54, testifying to the insanity of Townley, who was respited on this report.

The subsequent proceedings in this case are not a little curious. Thirty-nine visiting justices of Derbyshire, with an enthusiasm worthy of Dennis, the hangman in *Barnaby Rudge*, signed a strong protest against the respite. Public meetings were held, at which, and in a large section of the press, a torrent of invective was showered upon Sir George Grey, on those who had signed the certificate of lunacy, and on those who had given evidence of Townley's insanity. The effect of all this was, that a second commission were appointed to again report on the prisoner's mental condition. These gentlemen came to the conclusion that Townley was of sound mind, and he was again in danger of being executed. Ultimately the sentence was commuted to penal servitude for life, and, finally, this wretched lunatic, by committing suicide in prison, justified the opinion of those who pronounced him mad.

In the Official Report on Irish Prisons for 1864, p. 8, I find the following case, ably reported by Mr. Lentaigne, the Inspector-General of prisons, which, although less certainly a case of insanity than those I have already alluded to, is one, at any rate, very closely resembling some of those very remarkable cases mentioned by Dr. Winslow, and other psychologists, in which murder has been connected with the influence of some impression made on the mind in sleep by a dream. Dreaming, I may here remark, being a state that presents many analogies with insanity.

Mr Lentaigne says:—"In April, 1864, an execution took place in front of this (the Cavan) gaol, for a murder committed on the 23rd January, under circumstances well deserving attention, as connected with penal legislation. Bernard Cangley lived, fourteen years ago, as farm-servant with Peter Reilly, a farmer, in comfortable circumstances. During that period an ass, belonging to Reilly, bit the left hand of Cangley so severely that it had to be amputated. On his recovery he demanded compensation, which Reilly refused to give. Soon after, as I understand, Cangley went to America, but returning, was convicted of cow-stealing at Trim, and sentenced, on the 9th July, 1861, to three years' penal servitude. During the entire period of his detention in the convict depôt he never commited a single breach of prison rules; and

on one occasion, when a fellow prisoner was guilty of an offence, he gave information to his warder. On the 9th January, 1864, he was liberated on license, and, after remaining a few days in Dublin, went to Reilly's house in Cavan, where, on telling his name, he was treated with the greatest hospitality and kindness, and asked to sleep on the loft with the servant boy. Between two and three o'clock in the morning he came down from the loft, only half dressed, saying, "he could not sleep as there were lights or flashes of fire outside the house." Reilly got up to see what was the matter, and was immediately stabbed to death by Cangley, who also stabbed Reilly's wife when she came to her husband's assistance. He then fled, having only his shirt and trousers on, and at once gave himself up at a police barrack some miles distant, saying, "he had stabbed Reilly." The greatest pains were taken by the convict authorities to ascertain if, during the period of his imprisonment, he had ever shown the slightest indication of insanity, but all the medical officers of the convict dopôts agreed he was perfectly sane, and the prison officials in Cavan are of the same opinion. It is, therefore, evident that either he had nursed his revenge for the injury during nearly fourteen years, or else on the night in question some sudden impulse had roused him to commit the crime, even at the sacrifice of his own life; but this is negatived by the fact of his having the knife in his possession. The case is one of those psychological phenomena, the facts of which should be truly recorded, especially at a time when acquittals, on the grounds of insanity, are so easily obtained."

The Inspectors-General, however, evidently feel themselves in some degree restrained by public opinion, but they observe, in the above quoted report, that acquittals in similar cases are not sufficiently easy (query possible) to be obtained.

On the 20th of December, 1865, Stephen Forward, alias Southey, who was charged, in August last, with the murder of three boys in London, and also of the murder of his wife and child a day or two after at Ramsgate, was arraigned, tried, and found guilty, before Mr. Justice Mellor, at Maidstone, on the latter charge. The particulars of this case are too familiar to all of us to need any *precis* of the facts. And the execution of this wretched man appears to me, in itself, a terrible commentary on the injustice of our laws relating to the investigation and punishment of criminal lunacy.

The last of these cases which I shall refer to is that of Andrew Brown, who was tried before the High Court of Justiciary at Edinburgh, last assizes, and executed at Montrose in January, 1866. The prisoner was the mate of the schooner Nymph, and was tried for the murder of the captain of that vessel, at sea, off the Forfarshire coast.

On his trial the prisoner pleaded generally "not guilty," and pleaded specially that at the time the act was committed he was labouring under temporary insanity.

The following is the substance of the evidence:—

"John Pert; sailor, deponed,—I was engaged, on the 4th of September, to go a voyage on board the steamer Nymph, of Montrose. There were on board, besides myself, Alexander Reaburnes, Andrew Brown (the prisoner), and John Greig (the master). The prisoner was mate. I first saw the prisoner two or three days before we sailed. We were all sober when we sailed. The prisoner was so, so far as I saw. I had seen him every day for two or three days before that, and had not observed him to be the worse of drink. The master was asleep and snoring when he was killed. Brown slipped forward and went to the forecastle. I did not see him come aft, but I found afterwards that he had slipped behind me. My attention was first directed to that by hearing two heavy blows. I looked over my right shoulder on hearing them, and saw the master's head lying in two halves. I was stunned for a little bit; and Brown, who had the axe up, let it down again before I could get hold of him. The two blows I first heard were given quickly one after the other, and the prisoner had the third blow struck before I had time to interfere. I then rushed into the bulwarks and took the axe out of his hand and threw it overboard. The master was apparently dead by this time. After I had thrown away the axe Brown said:—'I have done the deed, and I will have to suffer for it.' *A few minutes afterwards he asked me if I would come and see him hanged. About five minutes after I had seized the axe from him he said, 'Jack, it is a good job you got the axe, or else you would have got the same.'* I had a good twist with him before I could get the axe out of his hands. When I was struggling with him he did not speak. I am sure he was sober at that time. I do not think he had much drink that day. Before we went to dinner on shore we had had a drink of ale together, but that was all. The prisoner then took the helm, and steered the vessel for Stonehaven. He spoke about his mother, and in course of conversation, said, but that he wished to see her he would go over the side. I understood by that he would drown himself, but that he wanted to see his mother. He asked the loan of a shilling from me after we passed Bervie, and said he had a sixpence, and he would give one shilling and sixpence to his mother. He said it would be the last money he would ever give her. He asked Reaburnes and me to wash up the blood, which we did. After the disturbance that had taken place on board we were afraid of Brown. He asked me if I would come to see him hanged. I made no answer. He was not weeping at any time. He said, '*Jack, I am going stark mad—out of my mind.*' This was said about two hours after the deed, and while he was steering."

Alexander Reaburnes corroborated the evidence. He said:—"Prisoner told us, '*I'm master of the ship, and want to go to Stonehaven to see my mother.*' *We tried to get from him, the best way we could, the reason for the murder, and he said, with great violence, and slapping his breast,* '*I have*

another to kill.' We asked what he had done this for. He simply replied, in a lamenting way, 'I have done the deed, and will have to suffer for it.' We asked him who the other person was he had to kill, but he would not tell us. I do not think he meant himself. *I did not observe any difference in his spirits after the murder. He was not like a drunken man.* He was not swearing or using any harsh language during the afternoon. In sailing into Stonehaven he always gave the orders, and gave them correctly. If this deed itself had not been done, there would have been nothing about him to attract attention at all."

Cross-examined.—"*I saw no exhibition of ill-feeling between the master and the prisoner.*"

"Evidence was then called for the defence, to show that the prisoner had sustained a fall in boyhood, and that he had had a fall four years ago which led to a surgical operation; that a block had fallen on his head about a year ago, and that he had suffered other bodily injuries, which had, his sisters deponed, changed his disposition from cheerful to sullen, and that he had gradually fallen into habits of drinking. The witnesses stated that very little drink produced great excitement in him, and some thought he was not right in his mind. As one witness expressed it, 'The dram went to his brain.'"

A verdict of guilty, however, was brought in, in face of this testimony, and he was sentenced to be executed on the 31st of January.

The foregoing cases in which sentence of death was pronounced or carried into execution on madmen might be very easily multiplied, but I think I have brought forward quite enough to prove that, by the laws still enforced in England, human life has often been judicially sacrificed, and death has been made the punishment of the most dire calamity that can befal man; an affliction, too, which may visit the best and wisest of mankind, and against which no precaution can be taken, and no means of prevention adopted—the loss of reason.

We are often told that the inhumane and barbarous customs of our ancestors would not now be tolerated by the advanced civilization and enlarged philanthropy of the nineteenth century. But I greatly fear that any one who considers the subject which this paper treats of will find too much evidence to prove that we overrate the moral effect of the superior civilization of the present day, and its influence in restraining the evil passions of human nature, its cruelty and desire for vengeance, and not for justice. It is true that the insane are no longer lashed and chained in madhouses as they were formerly; but it is not less true that they still may be, and often are, hung by the neck until they are dead, in punishment for acts committed under the impulse of madness.

I trust that, by the foregoing observations, I have succeeded in showing how uncertain and unjust is our present law in reference to the criminal responsibility of the insane; but a recent official document, the *Report of*

the Capital Punishment Commission, 1865, proves far more cogently than I could do so, the necessity of an amendment of the laws relating to, and the mode of determining, the mental capacity of criminals charged with capital offences. In the 18th section of that report the Commissioners say:—

"18. There are other questions of great importance upon which we have taken evidence, viz.:—(1.) The propriety of allowing an appeal on matters of fact to a court of law in criminal cases. (2.) The mode in which the crown is advised to exercise the prerogative of mercy by the Home Secretary. (3.) The present state of the law as to the nature and degree of insanity, which is held to relieve the accused from penal responsibility in criminal cases. It is obvious that these difficult questions are not confined to capital crimes only, but pervade the whole adminstration of criminal law. They therefore require a more general and comprehensive treatment than the terms of the commission under which we act will admit. We think, therefore, that while we should not be justified in making any recommendation to your Majesty on any of these points, we should fail in our duty did we not humbly solicit your Majesty's attention to them as requiring further investigation."

It, however, can surely need little evidence to prove that laws which are connected and deal with a scientific question, and which were enacted when that branch of science was in its infancy, and are in a great measure founded upon the false theories and imperfect knowledge of the time when they were made, are now far behind the present state of psychological information, and therefore require revision. To amend the present state of the law of criminal insanity I would propose two very short and simple, yet, I believe, most effectual, measures, viz.:—

1st. The 64th article of the French code should be adopted by our law in its entirety.

2nd. The question of madness should be decided by a tribunal of experts.

The article of the Code Napoleon to which I refer is as follows:—

"Il ny a ni crime ni délit, lorsque le prévenu etait en etât de démence au temps de l'action." [a]

In the State of New York a similar law has been long enacted:—

"No act," says this statute, "done by a person in a state of insanity can be punished as an offence, and no insane person can be tried or sentenced to any punishment for any crime committed in that state." [b]

In cases in which the defence of insanity is set up, the English law, as laid down by Mr. Justice Mellor, on the trial of Southey at Maidstone, December, 1865, is that "the question of the fitness of the prisoner to be

[a] French Penal Code, Article 64.
[b] Revised Statutes, vol. ii., p. 697.

tried should be determined before he was called on to plead. But in a case which occurred before his brother Blackburn, where it arose in the course of the trial, he put both questions at the end of the trial—whether the prisoner was in a fit state to be tried, and whether he was guilty or not guilty. There would be a great loss of time and great inconvenience in having the question tried twice over."[a]

By the 39th of George III., cap. 44, it is provided that—"If on the trial of any person for murder or felony, he appear to the jury charged on the indictment to be insane, the Court may order the finding to be recorded, and that he be kept in custody till Her Majesty's pleasure be known." It was moreover enacted by the 39th and 40th George III., cap. 94, and also by the 3rd and 4th of Victoria, cap. 54, that, even after sentence has been pronounced, "it shall be lawful for any two justices of the peace of the county or place where any person under sentence of death is confined, to inquire, with the aid of two physicians or surgeons, as to the insanity of such person; and, if it shall be certified by such physicians and surgeons that such person is insane, it shall be lawful for one of Her Majesty's principal Secretaries of State to direct, by warrant, that such person be removed to a proper receptacle for insane persons." This, however, was merely a permissive law, and was so seldom acted upon that when it was put in practice in the case of Townley, the press and public opinion were vehement, and almost unanimous in their condemnation of those who had ventured to save thus a madman from the gallows By the 27th and 28th of Victoria, cap. 29, an important modification was made in the law, by which the power of medical inquiry into the state of mind of persons under sentence of death was confined to physicians and surgeons specially appointed for this purpose by one of her Majesty's Principal Secretaries of State.

The second point on which I would insist, namely, that the question of insanity should be decided by experts, is unhappily opposed by the weight of public and legal, as distinguished from humane and scientific, opinion.

There is, unfortunately, a great aversion to the reception of medical evidence in cases of insanity, and such testimony carries little weight with either the judges or juries in most cases.

The opinion tersely expressed by Lord Chancellor Westbury, in the House of Lords, not very long since, when he spoke of "the vicious principle of considering insanity as a disease," seems to prevail widely in this country. The Earl of Shaftesbury, in his evidence before the select Committee of the House of Commons on lunatics, went so far as to say:—"For my own part I do not hesitate to say, from very long experience, putting aside all its complications from bodily disorder, the mere judgment

[a] The Times, December 21st, 1865.

of the fact whether a man is in a state of unsound mind, and incapable of managing his own affairs, requires no professional knowledge. My firm belief is that a sensible layman conversant with the world and with mankind can give not only as good an opinion, but a better opinion than all the medical men put together. I am fully convinced of it." At the trial of Foakes for murder, August 21st, 1862, the learned judge thus instructed the jury:—"If common sense is not to decide you ought not to be in that box; as juries do not pretend, and are not expected to have any scientific knowledge. . . . . You are not to be deprived (added the judge to the jury, proudly swelling with the sense of their own sagacity and importance) of the exercise of your common sense, because a gentleman comes from London and tells you scientific sense." Accordingly the jury exercised this common sense, and showed their proper contempt for science by finding a man stark mad, guilty of murder.

It would, of course, be misplaced and unnecessary here to stop for the purpose of discussing the necessity of scientific evidence, and the fallaciousness of those views which lead to its rejection. That insanity is a disease is patent enough to medical men who are well acquainted with the intimate connexion of mind and body; the relation which the health of the latter bears to that of the former, and the influence exercised by medicine over the diseased conditions of both; but it would take more time than I have now at my disposal to prove this proposition to lawyers and jurymen equally ignorant of physiology and psychology.

The difficulty of recognizing insanity, and of distinguishing between real and feigned insanity, and the consequent danger that under the plea of unsoundness of mind, madness may be feigned, and thus lead to the immunity of criminals, is probably the explanation of the reluctance with which judges and juries generally entertain that plea. This very difficulty is, however, the most powerful argument against the present system of dealing with such cases.

Nothing can probably require more discrimination, care, and tact than the recognition of some of the less evident forms of mental disease, or than to distinguish between real and simulated insanity. Such knowledge of the human mind cannot be acquired without special training and experience. And even with such training it is often a matter of extreme difficulty to discover evidence of insanity when delusions the most strange and strongly impressed on the mind actually exist. I was recently requested to visit a gentleman in a lunatic asylum near Dublin, for the purpose of signing a certificate. Yet such was the insane cunning with which he managed to conceal his madness, that although I was previously aware of the nature of his delusion, and conversed with him on the point for an hour, and though he presented the peculiar aspect of insanity which is more familiar to the attendants on the insane, than easy to describe, still I felt obliged to leave without signing the certificate. I, however,

subsequently sought an opportunity of again seeing this man, and then, at a single interview, ascertaining his madness, signed the paper. This I mention only as one of the instances which almost every practitioner meets with, showing the difficulty of pronouncing a person sane or mad.

No rational man would be likely to take the opinion of a jury of grocers, publicans, or tallow chandlers, as to whether his lungs were sound, or his watch in order, in preference to those of a physician or a watchmaker. And yet a question far nicer than either of those, the question of a man's healthy or diseased psychological condition—of all scientific investigations the most delicate and difficult—is, by the laws of England, left to the decision of such persons, assisted by a judge whose knowledge, however extensive it may be in legal matters, is hardly, if at all greater than theirs on any department of medical science.

But besides the foregoing, there is, I think, another cause assignable for the unfavourable opinions expressed by lawyers and judges as to the value of medical evidence in cases of insanity. They, perhaps, may consider that medical men, when employed either by the government as witnesses in cases of alleged criminal lunacy, or by either party to a private case of imputed insanity, may, and very likely unconsciously, be influenced by the fact of being produced or preferred by one side or the other—and thus sometimes, it may be, have the opinions they express more or less affected by the views of their employers.

On such occasions, and when placed in such a position, medical men should, however, bear in mind what they are, and consider themselves as members of a pre-eminently exalted, ennobling, and humanizing profession, having the sacred offices of a high and holy calling to perform, and bound at all hazards, and at every sacrifice of self-interest, to sustain the ends of truth and justice alone.

As lawyers predominate in the legislature, we can hardly hope to wrest the question of lunacy—although it is as medical a question as fever or consumption—from their control, but still something might be affected towards reforming and obviating the recurrence of the abuses I have indicated. If the voice of the profession were unanimous in urging the great importance of the subject on public attention, it might be possible to obtain the appointment of medical assessors in lunacy, who, as the nautical assessors do in marine cases, should advise the court on all professional points. This would to a great extent do away with the necessity for the examination of numerous witnesses in lunacy cases, save the public time, and would avoid the perplexing contradictions of conflicting professional opinions.

There are many other topics connected with the subject of insanity and criminal responsibility which my space prevents my even alluding to. I shall therefore conclude with expressing an earnest hope that a wiser and more humane spirit may before long pervade the laws of this country

relating to so-called criminal insanity; and that the most terrible punishment that man can inflict shall no longer be awarded to the unfortunate victims of disease.

PROCEEDINGS OF THE DUBLIN OBSTETRICAL SOCIETY.[a]

TWENTY-EIGHTH ANNUAL SESSION.

Dr. M'Clintock, President.

Rupture of the Vagina during Labour.—Dr. Byrne read a case in which the patient recovered after this accident.—10*th March*, 1866.

Rupture of the Uterus.—Dr. Isdell read a case of rupture of the uterus in which the patient recovered.—12*th May*, 1866.

Placenta Previa.—Dr. Isdell read a case of placenta previa, with remarks on the treatment of this complication.—12*th May*, 1866.

Pregnancy Complicated with Sub-acute Peritonitis and Ascites.—Dr. Ringland detailed a case of this complication.—12*th May*, 1866.

Double Monstrosity.—Dr. M'Clintock read a paper on this subject (*See page* 192.)

Medicated Pessaries.—Dr. Kidd exhibited a new form of medicated pessary, made for him by Mr. Pakenham, of Henry-street, since he had last brought the subject before the society. Dr. Kidd begged to remind the members that, on the 13th January last, he exhibited some pessaries made in Edinburgh, for Sir James Simpson's use, and some of the same description made by Mr. Pakenham. These were composed of cocoa-nut butter, a substance sufficiently firm at low temperatures to allow of the pessary being introduced into the vagina by the patient herself, but which melted very rapidly at the temperature of her body; but he then said that in practice he had found these pessaries were often objected to by patients, because, as the cocoa-nut butter melted it escaped from the vagina, and soiled the clothes in a very offensive manner, and that, to obviate this difficulty, he had latterly got the pessaries made as small as suppositories, so that, instead of containing 120 or 150 grains of

[a] These Reports are furnished by Dr. Geo. H. Kidd, Secretary to the Society.

cocoa-nut butter, they contained only five or ten. But a pessary of this size would not contain a sufficient dose of many of the medicinal agents that may be applied to the uterus with advantage, and it is difficult to properly introduce such small pessaries into the vagina; so that it becomes necessary for the medical man to apply them himself, by means of the speculum. This latter objection, Dr. Kidd said, applied also to another means of applying medicinal substances directly to the uterus, viz., that suggested by Dr. Tilt, by wrapping them up in cotton, and introducing it into the vagina, as this can only be done rightly by means of the speculum.

The requisites, Dr. Kidd said, for a good form of medicated pessary are:—

1st. That it can be introduced by the patient herself.

2nd. That it will bring the medicinal agent into contact with the mucous membrane of the vagina and uterus, and retain it there sufficiently long to allow of absorption, or of such local action as may be required.

3rd. That it will not be offensive to the patient, soil her clothes, or prevent the medicine having due effect, by allowing it to escape from the vagina.

The pessary now exhibited by Dr. Kidd complied with all these requisites, and had none of the disadvantages of the other forms, nor did it require the use of an instrument for its introduction into the vagina, like that recently suggested by Professor Racciborski. It was composed of cotton, coated with an exceedingly thin layer of cocoa-nut butter, so thin and so small in quantity as to be unobjectionable. In manufacturing this pessary, Mr. Pakenham rolls a small portion of cotton, to which a thread has been attached, on the end of a glass rod, giving it the form and size of the ordinary conical medicated pessary. He now dips it rapidly into melted cocoa-nut butter, so as to give it a uniform thin coat, to preserve its shape, and give it firmness. As soon as the cocoa-nut butter is cool, the glass rod is withdrawn, and the pessary now resembles an empty cartridge case, which may be charged for use by introducing into it the medicinal agent to be employed, and which may be used either in the state of dry powder, or mixed with glycerine or water. The end of the charged cartridge is now plugged with cotton and cocoa-nut butter, and it is ready for use.

It has now a form and consistence to allow of its easy introduction into the vagina by the patient herself. The layer of cocoa-nut butter soon melts, and mingles with the cotton, serving to bring the drug, with which the cartridge is charged, into contact with the vaginal mucous membrane, and allow of its action on it. When the pessary is introduced, the thread, which had been attached to the cotton, is allowed to hang out of the vagina, and serves as an easy means of withdrawing the cotton, when a sufficient time had elapsed for the action of the medicine.

Dr. Kidd stated that he had used these pessaries, charged with various substances, such as tannin, alum, iodides and bromides of potassium, iodine dissolved in glycerine, acetate of lead, opium, morphia, &c., and had found them most satisfactory; but he had learned that active preparations, such as tannin, which may irritate the mucous membrane, or morphia, should be used in smaller doses than in the old form of pessaries.—*9th June*, 1866.

Large Fibrous Interstitial Tumour of Uterus.—Dr. John A. Byrne exhibited to the society a very large fibrous tumour of the uterus, and stated that he regretted being unable to furnish any clinical history of the case to the members.

He was indebted for it to his friend Dr. Cruise, who, in making a *post mortem* examination of a patient under his care in the Mater Misericordiæ Hospital, who had died with apoplectic symptoms, removed it. Dr. Cruise was aware of the existance of it before the death of the woman, having felt the mass over the pubes when he was introducing the catheter to empty the bladder of the patient; this was rendered necessary by the state of coma in which she lay, and not by any obstacle caused by the pressure of the tumour itself, although, as the members might perceive, it was one of great magnitude.

She was forty-eight years of age, married, and sterile, having never been pregnant, and never had complained of any symptoms referable to the tumour during her lifetime. She never had hemorrhage; of this Dr. Cruise was almost positively certain, as she had been for a long time, indeed, a servant in the house of a family who would have consulted him if she had complained of any affection; and she always appeared to him to enjoy the most excellent health—a circumstance scarcely to be expected in a person in whom so great a change from the normal state existed as in this case.

The tumour is very large; it weighs $4\frac{1}{2}$ pounds, and is, in greatest diameter, $13\frac{1}{2}$ inches, and in its lesser $11\frac{3}{8}$ inches. It does not consist, however, of one single mass, but of an agglomeration of tumours, varying in size from that of an orange to that of a marble. They appear to be developed in a symmetrical way: thus, from the vaginal orifice to the fundus uteri it appears to consist of four masses separated by distinct sulci or depressions; the two larger of them are at the lower part, and two smaller near the fundus; those on the right side are larger than those on the left, as if those latter had not attained their fullest development; and from the other parts several smaller tumours are commencing to grow. I have counted them, and make out thirteen tumours in all; this arrangement gives to the whole mass a lobulated or mamillated appearance, which is rather remarkable.

On making a section of this mass from the os uteri to the fundus, we

observe that the canal, or cavity of the uterus, is completely changed from that of its original shape to that of a mere fissure, and is prolonged to the length of 6½ inches, being encroached upon and lengthened by the development of those masses on each side. It is worthy of remark, however, that the two tumours forming the greatest part of the mass leave a clear line or space between them, showing the original uterine structure, and proving that the metamorphosis must have commenced at different points of the uterine parietes.

On examining a section of the largest of the tumours its structure is well seen; it consists of a number of bands, some of which have a concentric and others an interlacing arrangement; this arrangement of the fibres is very well seen on examination with a lens. The tumour, on section, is very dense, has a firm, gristly feel, and is almost as strong as, and very like, the intervertebral cartilage; yet it does not present any trace of the calcareous degeneration so often seen in those neoplasmata, and of which some examples have been on different occasions exhibited to the society. This calcareous degeneration, according to Scanzoni, Becquerel, and others, may be looked upon as a natural process of cure, or rather as a cessation of development in tumours of this class, and is very often seen in cases where the person the subject of it is old, and they become so gritty and friable that they can be broken by the fingers.

The size to which these fibroids sometimes grow is very great. Thus Gauthier de Claubry mentions one which was 31 inches in its great, and 20 inches in its lesser circumference, and weighed 39 pounds; and Dr. Hewitt exhibited one at the Obstetrical Society of London which weighed 42 pounds, and was 44 inches in circumference. And I saw an instance of one of great magnitude, whilst assistant in the hospital, in which pregnancy occurred. The case is related in Dr. M'Clintock's work upon diseases of females, page 116, and is very remarkable. The woman came from the country, having been delivered of one child; on her admission, forty-eight hours afterwards, she gave birth to two more children. After her death a large fibrous tumour was seen occupying a considerable part of the anterior wall of the uterus. The case is very remarkable, as proving the possibility of the coexistence of, not only conception, but also of plural pregnancy, with fibrous tumour of the uterus of considerable magnitude.

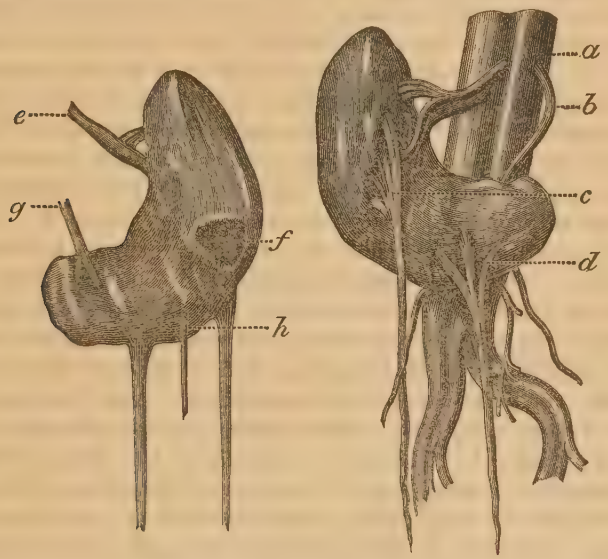
Hemorrhage or metrorrhagia is in general a symptom which shows itself at some period or other during the development of fibroid tumour, and in almost all the cases of this affection which I have seen it was a concomitant symptom; yet it is very remarkable that on no occasion did she complain of this to Dr. Cruise, who, as I have stated before, knew her for a very long time, and in all probability would have been made aware of the circumstance had it occurred.—*9th June*, 1866.

TRANSACTIONS OF THE COUNTY AND CITY OF CORK MEDICAL AND SURGICAL SOCIETY.[a]

SESSION 1864-65.

PRESIDENT in the Chair.

DR. MACNAUGHTON JONES exhibited an abnormal kidney that came under his observation in the dissecting room at the Queen's College. The kidney had shrunk, consequent on the time that had elapsed since its removal, as also from its having been preserved in spirit. The subject (a male) apparently about middle age, presented some abnormalities in his arterial system elsewhere; and on looking at the sketch, as taken by



a Aorta. *b* Renal vessels. *c d* Ureters. *e* Renal vessels. *f* Cyst. *g* Renal artery. *h* Vein.

Mr. Heazle, it will be seen that the aorta curved suddenly underneath the kidney, from left to right, and consequently the iliacs deviated from their usual course and direction, the left being much the longer and most curved. The kidney is that form alluded to by Dr. Rokitansky as a very rare one indeed, approaching as nearly as possible to a complete amalgamation of the two organs, lying on the right of the spinal column, extending from the eleventh rib to the third lumbar vertebra, crossing the vena cava and aorta, and lying over, at its extremity, the vertebral column. There is on its anterior surface, and extending back to its

[a] These reports are supplied by Dr. Curtis, Secretary to the Society.

posterior, a sulcus, apparently the original marking of its division into two distinct organs.

The kidney received two renal arteries, the right one bifurcating and entering in company with its vein at the hilus, where one ureter emerges. The left one, longer than the other, descended in front of the aorta, and entered by itself abruptly to the left, its corresponding vein not accompanying it, but emerging directly from the convex surface of the kidney. There is not the slightest breach of continuity at the sulcus spoken of in the structure of the kidney; one of the ureters appears to emerge directly from the substance of the kidney, not joining the other, but pursuing a separate course over the convex aspect of the kidney, parallel with its fellow to the bladder. In the sketch the posterior surface of the organ is represented, and on the kidney, as delineated in it, two depressions for the vena cava and aorta. Examining the kidney on this surface there will be perceived a triangular depression or hollow, apparently the remains of a small cystic tumour.

I thought that as a form of kidney of which I have not seen much notice taken it might be interesting to draw your attention to it; and should be glad if by any means I might learn some particulars of the man's history while at hospital.—25*th April*, 1866.

Dr. Johnston, surgeon, Cork District Military Prison, exhibited pathological specimens of phthisical cavities, hepatized lung, acute pericarditis, and Bright's disease, taken from a soldier who died in the Garrison Hospital, on the 21st February, 1866.

This soldier was thirty-five years of age; eighteen years' service, and of tolerably temperate habits. He had served nine years in the Cape Colony, and four years in India.

While serving in India he suffered from attacks of hepatic disease, and was proposed for discharge from the service in 1861, in consequence of repeated attacks of chronic rheumatism.

He was stationed at Hythe, in 1865, and in April of that year he was attacked with cough and hemoptysis, soon followed by loss of flesh, expectoration, and other symptoms of phthisis, for which he was invalided, and sent to the Cork Garrison Hospital, where he was admitted on the 13th of December last, when his condition was noted to be as follows:—

He was much emaciated and feeble, the pulse rapid and compressible, both legs œdematous; urine scanty, deep coloured, and highly albuminous, specific gravity 1010. Percussion elicited a duller sound than natural in both sub-clavicular regions, and muco-crepitant râles were audible on the application of the stethoscope over the apices of both lungs anteriorly and posteriorly. He coughed frequently, and expectorated copiously, the sputa being flocculent. The skin at times, the patient stated, was moist; but on admission was rough, dry, and harsh as parchment. For weeks

prior to admission the bowels were confined, and frequently required the administration of purgatives. No material change occurred in these symptoms until about ten days prior to his death, when the expectoration became muco-purulent, intense thirst set in, which required a large quantity of fluid daily for its alleviation. The anasarca increased, the abdomen became tympanitic, the pulse rapid and feeble, dyspnea became urgent, and he died, exhausted, on the 21st of February, neither coma nor convulsions having supervened.

The treatment adopted included the occasional administration of hydragogue purgatives, diaphoretics, the hot-air bath, preparations of iron in combination with quinine, and cod-liver oil, &c., with support by means of ale, wine, eggs, broths, &c., &c., given in small quantities and at short intervals.

Autopsy.—The body was much emaciated, and the lower extremities œdematous. Both lungs contained masses of tubercular deposition, both indurated and softened, and were adherent to the parietes of the chest posteriorly, by very strong, broad bands, the result of an old pleuritic attack.

An irregularly shaped cavity, with soft, rough walls, was found in the apex of the left lung, traversed by several fibrous-looking cords, the remains of obliterated bronchial tubes and vessels.

There was a smaller abscess in the apex of the right lung, containing comparatively healthy undecomposed pus. This abscess was circumscribed, and lined with a small white pyogenic membrane, intimately adherent to the surrounding lung tissue, and did not communicate with any bronchial tube. The posterior half of the inferior lobe of right lung was hepatized, and was probably the immediate cause of death. The pericardium contained about 8 oz. of transparent straw-coloured fluid; the heart was soft, somewhat enlarged, and weighed 12 oz.; its surface was rough, and covered with a layer of scrofulous-looking lymph, the result, evidently, of a recent pericardiac attack.

Both mitral and aortic valves were free from disease. The spleen weighed 12 oz., was enlarged, congested, soft, and friable. The liver was normal in size and appearance, and weighed 4 lb. 1 oz.; on the anterior or convex surface of the right lobe there was a well marked cicatrix, with loss of substance, and thickening of the capsule, the result, probably, of an abscess which occurred during his service in India, although no cicatrix corresponding with the site of the supposed abscess could be detected in the abdominal wall. Both kidneys were soft, congested, and flabby, of a whitish colour, and considerably enlarged; the right weighed 9 oz., the left 8 oz.; both presented well marked examples of the second stage of the inflammatory form of Bright's disease.

Remarks.—This case possesses some interest, as it illustrates the cause of death in many cases of Bright's disease, viz., by the supervention of

acute visceral inflammation before the disease of the kidneys advances sufficiently to cause death by uremic poisoning.

The order of sequence of the organic diseases in this case appears to have been phthisis in the first instance, induced, probably, by exposure to vicissitudes of temperature and climate, in a constitution predisposed by the scrofulous diathesis to take on diseased action of a specific character. The nephritic disease then set in, probably not more than about three months antecedent to his death, judging from the pathological condition of the kidneys.

The pericardiac inflammation was not evidenced by any localized symptom; it appeared to be of a sub-acute character, and to have set in very insidiously—probably three or four weeks prior to the fatal termination of the case; and owing to effusion taking place at a very early stage of the disease no friction-sound was detected.

The pneumonic complication took place about five days previous to death, and although limited to the base of the right lung was the immediate cause of death in consequence of his previously debilitated condition.—28*th February*, 1866.

CLINICAL RECORDS.

Case of Poisonous Effects Produced by Exposure to the Fumes of Roasted Tobacco, and Excessive Use of "the Weed." By T. H. Babington, M.D., Surgeon Londonderry Infirmary.

Patrick Collier, aged thirty, visited by Dr. Harkin, Londonderry (to whom I am indebted for the accurate notes of the case prior to the patient's admission to County Infirmary). On the evening of 18th February, whilst passing his urine, was attacked with sudden and most violent pain in his head, followed immediately by vomiting; the pain was so violent he screamed for assistance; he was found pale, skin cool, covered with a clammy sweat, pupils contracted, irresponsive to light, pulse 48, small and feeble; he was perfectly conscious; complained bitterly of the pain in his head, his voice was feeble and low, he was evidently suffering from intense nervous prostration. He admits having been addicted to drinking ardent spirits to excess, and to an inordinate use of tobacco, and at the same time was exposed for several hours daily to the fumes arising from tobacco while being "stoved." He never had syphilis; he has a slight stricture of the urethea. Moderate medicinal stimulants were administered, with heat to the extremities, applied to induce reaction, and a purgative of calomel and jalap ordered.

February 19th.—His head felt easier, pulse 60, skin warm; he says the pain is now most intense when he makes water; that it comes on with sudden and intense violence just as micturition begins. The urine is high coloured, s. g. 118, non-albuminous; pupils still contracted, very slightly obedient to light. He was cupped on the nape of neck to extent of four ounces, and ordered three grains iodide potassium and ten mins. liq. potassæ, thrice daily, with infusion of gentian; blisters applied behind the ears. During the few following days the pain in head, as described, remitted slightly, but was invariably materially increased on his assuming the upright posture and at micturition. He never complained of uneasiness in the region of the kidneys, bladder, or track of the ureters.

February 22.—His pupils were widely dilated, and obedient to light.

February 26.—He was admitted into County Infirmary, pretty much in the condition above described, viz.—pulse 60, small and weak; countenance anxious and distressed; pupils dilated; little sleep; pain of head in paroxysms, and greatly increased at micturition; tongue moist, covered with a white fur. The only change made in the treatment adopted by Dr. Harkin was substituting the bromide for iodide of

potassium; a blister was applied to the vertex of the head, and he was ordered coffee for breakfast and supper.

27th.—He awoke suddenly in the night with excruciating pain in his head, which continued with violence for an hour.

28th.—Not in so much pain; his pulse 60; he referred the pain to the right side of his head, under the parietal bone.

He improved very slightly, if at all, till March 6th, when at the morning visit, on being examined rather more minutely than usual, in order if possible to detect any symptom which had escaped observation, a strong smell of nicotine was observed; and on smelling his hands, arms, neck, &c., nicotine was readily recognized pervading the cutaneous surface, evidently excreted with the perspiration. He was directed to continue his medicine, viz.—five grains bromide of potassium three times a day, and to have a vapour bath for half an-hour at bed time. On the evening of the 7th, when in the vapour bath, the patients in the ward all recognized the odour of tobacco. The vapour baths were continued each night till the 12th March, when he left the hospital, at his own desire, much improved.

Ten days after his discharge he was seen by Dr. Harkin; the smell of nicotine was still perceptible on his skin, and he occasionally suffered from pain in his head. Dr. Harkin had given him several vapour baths.

11th April.—He was seen by Dr. Harkin, much improved in appearance; he still suffered occasionally from the pain in his head; the odour of nicotine was not perceptible.

It is well to remark that our senses of smell were in no way deceived, for we carefully distinguished between the smell of tobacco oil on the clothes and the odour of nicotine on the skin.

INDEX

TO THE FORTY-SECOND VOLUME.

Air, epidemic constitution of, 135
Amputation, at hip joint, 297—tying of veins in, 465.
Anatomy, atlas of surgical and topographical, by Beraud, *Rev.*, 167
Aneurism of aorta, 402, 474, 512.
Annandale, malformations, diseases, and injuries of the fingers and toes, and their surgical treatment, *Rev.*, 426.
Anteversion of uterus, 116.
Amyloid substances, formation and destination of, 162—degeneration, 475, 502.
Aorta, aneurism of, 402, 474, 512.
Aphasia, 439, 445, 488, 507.
Army hygiene, by Gordon, *Rev.*, 416.
Asthma, chloroform in, 84.

Babington, on flax mills, their machinery, accidents occurring therein, with suggestions for their prevention, 392—case of poisoning by fumes of tobacco, 544.
Bacon, on cancer of the brain, *Rev.*, 466.
Banks, case of hemiplegia with loss of speech, 488.
Barton, on results of stricture, 501.
Beale, new observations on structure of nerve centres, *Rev.*, 128.
Beatty, contributions to medicine and midwifery, *Rev.*, 397
Beck, on microscope, *Rev.*, 414.
Belcher, Memoir of Sir P. Dun, by, 231—*Rev.*, 413
Bennett, patent foramen ovale, 174—tumour of uterus, 493.
Bevan report on scalds of the larynx, 367.
Billing, on the treatment of cholera, *Rev.*, 403.
Bladder, calculus in, 480—rupture of, 485, 499.
Bone, necrosis of inferior maxilla, 172—exostosis of vomer, 334—necrosis of superior maxilla, 337.
Bonnafont, le cholera et la congres sanitaire, *Rev.*, 132.
Brain, inflammation of, distinguished from fever, by temperature, 65—new observations on structure of nerve centres, *Rev.*, 128—symptoms and diagnosis of tumours of, *Rev.*, 435—cancer of, 466—ossification of dura mater, 486—softening of, 507.
Butcher, on amputation at hip joint, 297.
Byrne, case of puerperal fetid pulmonary abscess, 210—case of rupture of vagina during labour, 537—large fibrous tumour of uterus, 539.

Cancer, visceral, 169—of uterus, mode of death in, 401—works on, *Rev.*, 467.
Cancrum oris, operation to repair deformity from, 328.
Cerebro spinal meningitis, temperature in, 62, 65.
Chloroform, medical uses of inhalation, 83—for gall stone, 83—in asthma, 84—in hooping cough, 84—epilepsy, 85—as an aid to the taxis 95—in midwifery, 399—in operations for cleft palate, 425.
Cholera, origin of, 133—conditions necessary for spread of, 135, 141—portability of, 138, 404—origin of recent epidemic, 138, 404—origin of, 133—elimination in, 146, 410—pathology of, 145, 152—treatment, 145, 156, 405—recent works on, *Rev.*, 132, 403—venesection in, 408—use of sulphites in, 411.
Chromic acid, use of for granular erosion of, in uterus, 111.
Cockle, on intra-thoracic cancer, *Rev.*, 466.
Codex-medicamentarius — pharmacopée Française, *Rev.*, 447.
Collis, M. H., contributions to operative surgery, Part I., operations about the face, 324.
Compton, T. A., on temperature in acute diseases, 60.
Conception, obstacles to, 108—conditions essential to, 108.

Cooke, on cancer, its allies and counter feits, *Rev.*, 466.
Cork med. and surg. society, transactions of, 194, 541.
Corvisart, memoirs on a function of the pancreas little known, *Rev.* 120.
Croly, necrosis of lower jaw, 172.

Delirium tremens, digitalis in, 200.
Denham, case of acute inversion of uterus after delivery, 181—fibrous tumour of uterus, 498.
De Ricci, on the use of sulphite of magnesia in the treatment of zymotic disease, 360.
Digitalis, uses in med. practice, 194—active principles of, 196.
Diphtheria, Hayden, on use of hyposulphites in, 86.
Disease, temperature in acute, 60—use of sulphites in zymotic, 360.
Dobell, on nature, cause, and treatment of tuberculosis, *Rev.*, 120.
Drysdale, on cholera, its nature and treatment, *Rev.*, 403.
Dun, memoirs of Sir P., 231—*Rev.*, 413.
Duodenum, laceration of, 497.
Dura mater, ossification of, 478.
Duncan, case of hepatic abscess, 491.
Dysmenorrhea, 115, 402.

Ecraseur, Sims' porte chain for, 113.
Epidemics, Smith on common nature of, *Rev*, 132, 136.
Epilepsy, chloroform in, 85—digitalis in, 201.
Epithelioma, of nose, 326—of mouth and cheek, removal, 329, 330—of tongue, 338.
Ergot, of rye, influence of, on fetus, 399—use of in midwifery, 399.
Erysipelas, temperature in, 64.
Eustace, case of ossification of dura mater, 478.
Eye, ophthalmia of new born infants, 184—mode of examining in infants, 188—examination of with ophthalmoscope, 345—staphyloma, 495.

Face, Collis on operations about, 324.
Fetus, influence of ergot of rye on, 399.
Fever, diagnosis of typhus from cerebral affections by thermometer, 65—scarlet, temperature in, 64—course of temperature and pulse in typhus and typhoid, 71.
Fistula, vesico vaginal, 402.
Fingers, malformations, diseases, and injuries of, and toes, Annandale on, *Rev.*, 426—operation for webbed, 427—injury of digital nerves, 429—excision of metacarpo-phalangeal joints, 434.
Flax-mills, their machinery, accidents occurring therein, with suggestions for their prevention, 392.
Fleming, case of lithectasy, 480—polypus of rectum, 487—fracture of pelvis, 499.
Forceps, use of, in difficult labour, 398.
Foster on the use of the sphygmograph in the investigation of diseases, *Rev.* 125.
Fracture, of vertebræ, 1—of skull, 173—of pelvis, 485, 499.

Gangrene, senile, 433.
Glycerine, use of, in affections of uterus, 112.
Gordon, C. A., on army hygiene, *Rev.* 416.
Gordon, S., case of trephining of the spine, 2.
Greenhow, on causes of cholera, 141.
Griffith, on microscope, *Rev.*, 414.

Hamilton, E., case of intra-thoracic aneurism, 474.
Hamilton, on injuries of nerves, 431.
Hayden, on diphtheria, 86—case of cardiac disease, 179—on visceral cancer, 169—softening of brain, 507—aphasia, 507—aneurism of aorta, 512—cirrhosis of liver, 519.
Heart, on the action of, 35—ganglia of, 130—mitral obstruction, aortic regurgitation, 197—patent foramen ovale, 174—disease of valves of, 504, 506, 517, obesity of, 511.
Heat, of body, normal, 60—in disease, 60.
Hernia, strangulated inguinal, 94—use of chloroform, 95—congenital, 98.
Hip, amputation at, 299.
Hooping cough, chloroform in, 84.
Hygiene, army, by Gordon, *Rev.*, 416.

Influenza, preceding epidemic of cholera, 136.
Insanity, and criminal responsibility, 224, 523—moral, 229—ossification of dura mater in a case of, 486.
Iron, styptic salts of, 112.
Isdell, case of rupture of uterus, recovery, 537—on placenta previa, 537.

Jennings, case of disease of heart, 504, 506, 517.

Johnson, G., on cholera, its nature and treatment, *Rev.* 132, 145—on epidemic diarrhea and cholera, *Rev.*, 403.
Johnston, case of diseased lung, heart, and kidneys, 542.
Joint, amputation at hip, 297.
Jones, on digitalis and its uses, 194—abnormal kidney, 541.
Joynt, case of protracted utero-gestation, with remarks, 377.

Kidd, Chas., on medical uses of chloroform inhalation, 83.
Kidd, G. H., on an improved form of medicated pessary, 537.
Kidney, abnormal form, 541—Bright's disease of, 482.
Kingsford, on a new theory of cholera, *Rev.*, 403.

Labour, use of instruments in difficult, 398—ergot of rye in, 399—complicated with a tumour in the pelvis, 400—rupture of vagina during, 539—complicated with peritonitis and ascites, 537.
Ladame, symptoms and diagnosis of tumours of the brain, *Rev.*, 435.
Laryngitis, chronic, 171.
Larynx, report on scalds of, 367.
Law, on obesity of heart, 511.
Lectures, clinical, by Solly, *Rev.*, 463.
Lithectasy, case of, 480.
Liver, use of chloroform in gall stones, 83—M'Donnell on functions of, *Rev.*, 162—abscess of, 491—amyloid degeneration of, 501—rupture of biliary duct, 518—cirrhosis of 519.
Lunatic, criminal autobiography of a, 224.
Lung, puerperal fetid abscess, 210—pneumothorax without perforation, 202—pneumonia, 64.
Lyons, case of Bright's disease, 482.

Madden, on insanity and criminal responsibility, 224, 523.
Mania, puerperal, symptomatic of blood poisoning, 215—and criminal responsibility, 224, 523.
Materia medica, S. Jackson's note book of, *Rev.*, 411—French pharmacopeia, *Rev.*, 447.
M'Clintock, case of double monstrosity, 192.
M'Cormac, reports of hospital cases; strangulated inguinal hernia, 94.
M'Donnell, R., on the operation of trephining in cases of fracture of the spine, 1—on functions of liver and formation and destination of amyloid substances, &c., *Rev.*, 162—on chronic laryngitis, 171—fracture of skull, 173.
Medicine and midwifery, contributions to by Beatty, *Rev.*, 397.
Menorrhagia, 110—use of digitalis in, 199.
Menstruation, definition of healthy, 110—causes of profuse, 110—painful, 115, 402.
Microscope, recent works on, *Rev.* 414.
Midwifery and medicine, contributions to, by Beatty, *Rev.*, 397—use of instruments in, 398—ergot of eye in, 399—chloroform in, 399.
Monster, double, 192—delivery of, 193—diagnosis of, 194.
Moore, on antecedents of cancer, *Rev.*, 467.
M'Pherson, cholera in its home, *Rev.*, 132.
M'Swiney, on rupture of biliary duct, 518.
M'Swiney, case of recovery from traumatic tetanus, 219.
Murder and suicide, attempted by a lunatic, 224.
Muscle, Ranke, researches on condition of in tetanus, 450.

Nails, ingrowing, 428—horny, 428.
Necrosis of lower jaw, 172—of upper jaw, 337.
Nerve, new observations on structure of centres, *Rev.*, 128—division of gustatory, injury of digital, 429.
Nose, lupoid destruction of, rhinoplasty, 324—epithelioma of, rhinoplasty, 326—fibro-plastic growth from, 331—exostosis of vomer, 334.

Obstetrical Society of Dublin, proceedings of, 181, 537.
Ophthalmia of new born infants, 184.
Ophthamoscope, on the theory and principles of, 345.
Osteo-sarcoma of leg and thigh, 297.

Palate, Warren on fissure of hard and soft, *Rev.* 424.
Parkin on antidotal treatment of cholera, *Rev.*, 483.
Pancreas, Corvisart on digestion of azotized aliment by, 120—defect in action the cause of tuberculosis, 123.
Priapism in injuries of spine, 28.
Paton, G., on the action of the heart, 35.
Pathological Society of Dublin, proceedings of, 168, 474.

Pellarin, le choléra ou typhus Indien epidemie de, *Rev.*, 132.
Peritonitis, frottement in, 402.
Pessaries, medicated, improved form of, 537.
Pharmacopeia, —new French, *Rev.* 447.
Physicians, transactions of the Medical Society of, 210, 523—Charter of College of, 249—liability to cholera, 145.
Placenta previa, 537.
Pneumonia, temperature in, 64—tympanitic resonance in, 206.
Pneumothorax without perforation, 202.
Polypus of uterus, 112—of rectum, 487.
Pregnancy, case of protracted, 377—complicated, with a tumour in the pelvis, 401—with peritonitis and ascites, 537.
Procidentia of uterus, 117.
Prolapse of uterus, 117, 402.
Pubes, fracture of, 485.
Purser, case of amyloid degeneration, 475, 502—on staphyloma, 495.

Quarantine in cholera, 140.
Quickening, date of, in pregnancy, 380.

Ranke on tetanus, *Rev.*, 450.
Record, clinical, 544.
Rectum, polypus of, 487.
Retroversion of uterus, 116,
Rheumatism, temperature in acute, 64.
Rhinoplasty, Collis on, 324.
Ringland, case of pregnancy complicated with peritonitis and ascites, 537.

Sansom, on arrest and prevention of cholera, *Rev.*, 403.
Scalds of larynx, 367.
Scarlatina, temperature in, 64.
Scoresby-Jackson, note-book of materia medica, *Rev.*, 411.
Sedgwick, on nature of cholera as a guide to treatment, *Rev.*, 403.
Septicemia, temperature in, 62.
Sims, clinical notes in uterine surgery, by, *Rev.*, 107.
Skull, fracture of 173.
Smith, on epidemics, *Rev.*, 132.
Snow, on cause of cholera, 142.
Solly, surgical experience, *Rev.*, 463.
Sound, uterine, 109-117.
Speech, loss of in disease of brain, 439, 445, 488, 507.
Sphygmograph, Foster on use of in the investigation of disease, *Rev.*, 125.
Spine, trephining in fracture, 1—diagnosis between laceration and compression of cord, 25—reflex movements in injury of, 27—softening of cord in three forms, 30.
Spitta, brief remarks on cholera, *Rev.*, 403.
Sponge tents, 112.
Staphyloma, 495.
Sterility, Sims on, *Rev.*, 107.
Story on cholera, *Rev.*, 132.
Stricture, use of catheters in, 465—results of long-continued, 501.
Suicide and murder attempted by a lunatic, 224.
Sulphites, use of in zymotic disease, 360—in cholera, 411.
Surgery, clinical notes in uterine, by Sims, *Rev.*, 107—contributions to operative, by M. H. Collis, 324—clinical lectures, by Solly, *Rev.*, 463.
Symes, case of separation of symphisis pubis and rupture of bladder, 485—laceration of duodenum, 497.

Temperature, on the practical value of daily observations on in acute diseases, 60—normal of body, 61—increase of in injury of spine, 28—in typhus and typhoid, 64, 71—in pneumonia, 64—in erysipelas, 64—in acute rheumatism, 64—in tonsillitis, 64—in scarlet fever, 64.
Tetanus, case of recovery from traumatic, 219—a physiological study, by Ranke, *Rev.*, 450.
Thermometer, use of in reference to acute disease, 60.
Tobacco, poisonous effects of, 544.
Toes, malformations, injuries, and diseases of and fingers, Annandale on, *Rev.*, 426.
Tongue, operations for epithelial disease, 338—division of gustatory nerve, 341.
Tonsillitis, temperature in, 64.
Townsend, E. R., case of pneumothorax, without perforation, 202.
Tuberculosis, Dobell on, *Rev.*, 120.
Tucker, on cholera, *Rev.*, 132.
Typhus and typhoid, range of temperature in, 71.

Ulcer, fibro-plastic, of mouth, 331.
Urethra, stricture of, 465, 501.
Utero-gestation, case of protracted, 377.
Uterus, clinical notes on surgery of, by Sims, *Rev.*, 107—examinations, 109—treatment of granular erosions, 111—polypi of, 112, use of glycerine in affections of, 112—obstruction of os, 115, 402—malpositions of, 116, 401—

use of the sound, 109, 117—procidentia, 117, 402 — longitudinal hypertrophy, 118—acute inversion after delivery, 181—action of digitalis on, 199—mode of death in cancer of, 401—rupture, recovery, 537 — large fibrous tumour of, 493, 498, 537.

Vagina, rupture of during labour, recovery, 537.
Vaginismus, 119.
Veins, tying of in amputations, 465.
Vertebræ, fracture of, 1.
Vomer, exostosis of, removed by a new operation, 334.

Warren, on fissures of hard and soft palate, *Rev.* 424.
Water, impure, a cause of cholera, 142.
Whitlow, 428.
Wilson, on ophthalmia of new born infants, 184—on the theory and principles of the opthalmoscope, 345.
Wise, cholera, its symptoms, causes, and remedies, *Rev.*, 137.